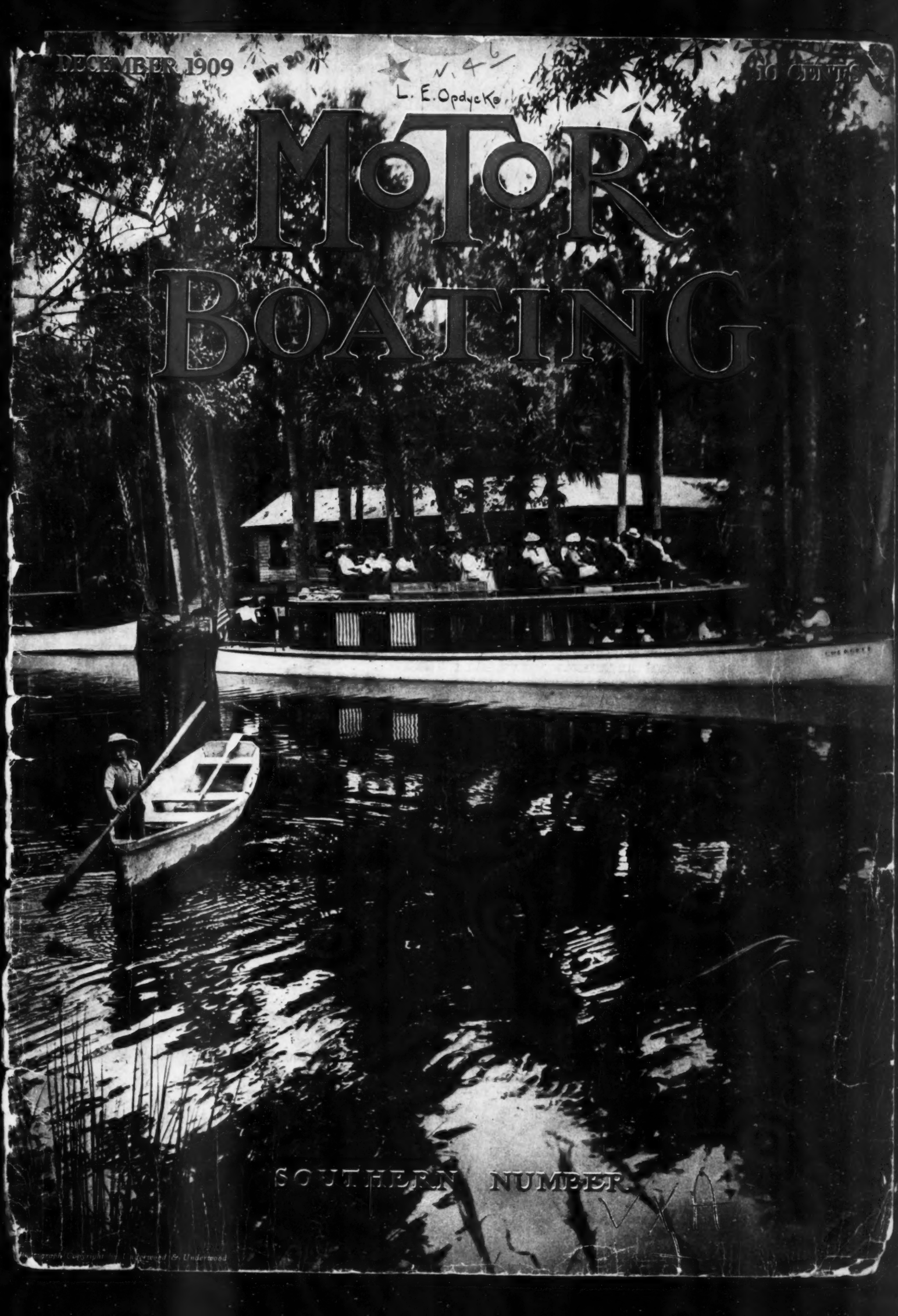
DECEMBER 1909

MAY 30
N. 46
L. E. Opdycke

10 CENTS

MOTOR BOATING



SOUTHERN NUMBER

Copyright by Underwood & Underwood

LARGEST MOTOR BOAT ORDER EVER PLACED

In competition with reputable designers and builders, we were awarded the contract to design and build these twin yachts; same size, type and equipment, each with a 22-mile ELCO EXPRESS tender, making it the largest private order for motor yachts ever placed. This, in conjunction with the confidence in us displayed by the United States and Canadian Governments, clearly establishes our leadership. WE BUILD every size and type of motor boat, equipped with either gasoline or electric power and guarantee you satisfaction.

Send for Catalogue of ELCO MOTOR BOATS.

Address **Elco-Bayonne, N.J.** 201 Ave. A

Chicago Showrooms, 1205 Michigan Ave.

27 minutes from New York, Liberty St. or 23rd St. Ferry, C. R. R. of N. J.

STANDARD ENGINE WINS

The New York-Bermuda Ocean Race

Photo. Copyrighted 1910 by Edwin Levick, N. Y.

The "Heather"

Winner New York-Bermuda Ocean Race. Owned by Mr. Richmond Levering. Equipped with a regular stock 40 H.P. "STANDARD" engine

650 KNOTS OF OCEAN TRAVEL

The unequaled results of the long, continuous run of the "Heather" under Mr. Levering's management without the slightest engine trouble is an actual demonstration of what can be expected in the hands of the individual owner of a "STANDARD" motor, and demonstrates the reason why the "STANDARD" has the highest reputation of any gasoline marine engine.

Write for catalogue.

STANDARD MOTOR CONSTRUCTION COMPANY

172 Whiton Street, Jersey City, N. J., U. S. A.

IN SOUTHERN WATERS

Contents---December, 1909

Bemini, In Gannet to..... 3
British Columbian Waters, Cruising in..... 10
Business Motor Boats at New Orleans..... 21
Ceylon, Motor Boats in..... 53
Clubs, Among the 43
Developments in Motor Boating Abroad..... 46
How Big Can a Motor Boat Be?..... 15
Inland Route to Florida..... 8
Laying Up the Batteries..... 23
Monaloa—A 130-Foot Cruiser..... 33
Moorings for Motor Boats..... 44
Motor Boating Calendar..... 32
Motor Boat Navigation, Hints on.—Part VII. Running in Fog 19
Motors for Motor Boats..... 48
New Motor Boat Designs:
A 35-Foot Cabin Cruising Launch..... 24
A 30-Foot Cabin Launch..... 25
An All-Weather 50-Footer 27
Ruth, A 50-Foot Yacht Tender... 27
A Comfortable 35-Footer..... 27
24-Foot Lightship Tender..... 27
Two 98-Foot Motor Yachts..... 28
New Things for Motor Boatmen..... 49
Our Naval Architects, Talks with: Morris M. Whitaker..... 18
Palm Beach, Motor Boating at. (Double Page Photograph) .....36 and 37
Palm Beach, The Coming Races at..... 15
Palm Beach, Racing at..... 14
Prize Contest in Questions and Answers..... 40
Queen Mab—An Original 54-Footer..... 38
Southern Cruiser, Requirements of a..... 16
Trinidad, From Florida to..... 5
Regarding Waterways Improvement, The Intra-Coastal Canal 31
Yard and Shop..... 51

The National Magazine of Motor Boating

MOTOR BOATING

December, 1909. Vol. IV. No. 6.

Entered as second-class matter at the New York, N. Y., Post Office.

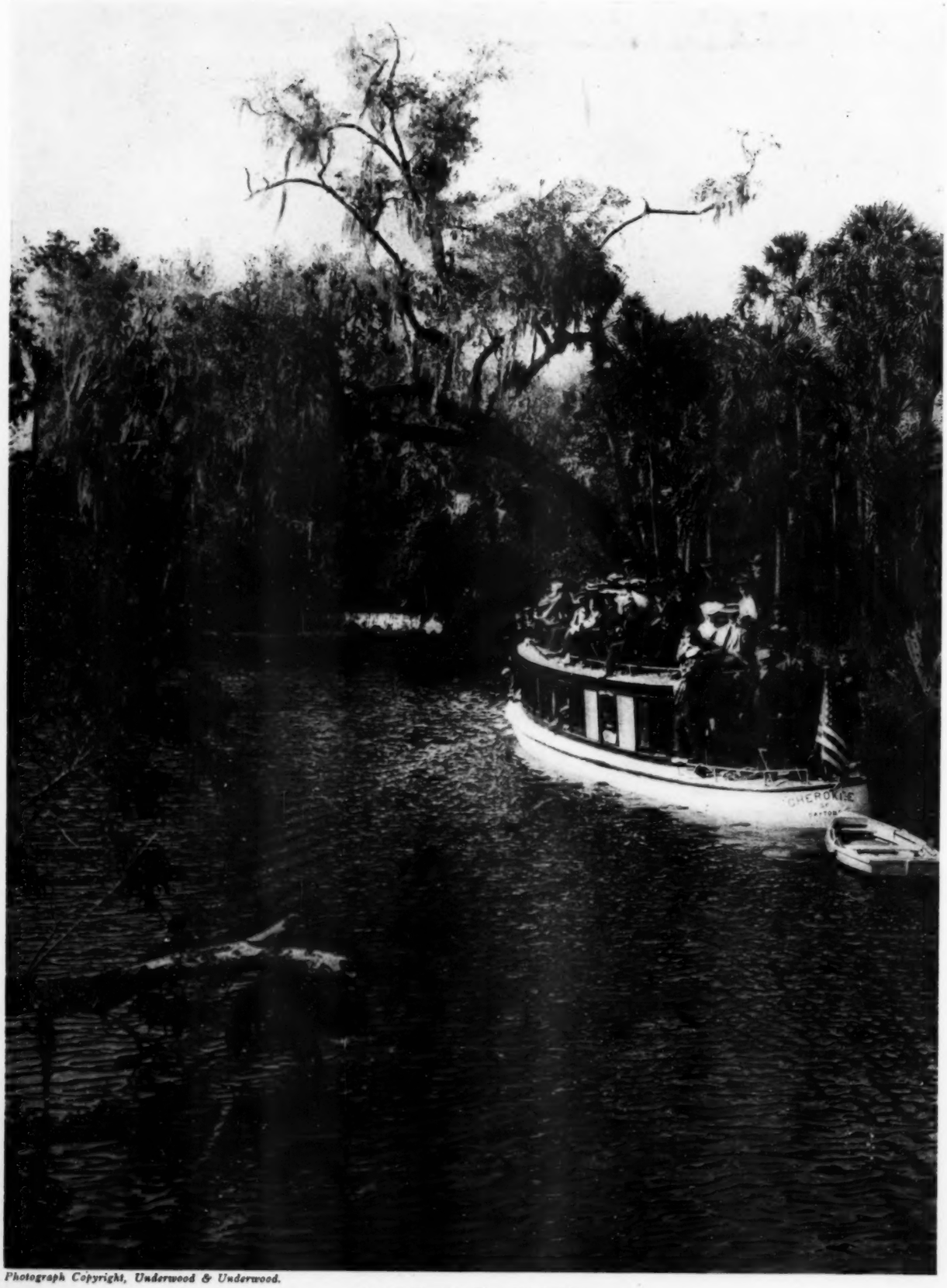
Copyright, 1909, by New Publication Company

Published Monthly by NEW PUBLICATION COMPANY, 2 DUANE STREET, NEW YORK CITY

G. L. Willson, President George von Utassy, Treasurer C. J. Shearn, Secretary

Telephone: 1240 Beekman Cable Address: Motoria

10 *cents a copy. Subscription* $1.00 *a year. Foreign* $2.00 *a year.* European Agents: Saarbach's News Exchange, Mainz, Germany.



Photograph Copyright, Underwood & Underwood.

On the Tomoka River in Florida.

MOTOR BOATING

THE NATIONAL MAGAZINE OF MOTOR BOATING

In Gannet to Bemini.

Miami, Florida, to the Bahama Islands. An Interesting One Week Side Trip for the Motor Boatman Cruising Along the Florida East Coast.

By James K. Clarke, N. Y. Y. C.

AHOY, Southbound Yachtsman!

If you care to take a little side trip, after you reach the land of sunshine, clear water and bright fishes, go down to Cape Florida and anchor till after midnight, if your yacht is a cruiser of moderate speed; then run down to the Southeast till you get Fowey Rock light about astern and lay a course east by south for Gun Key Light on the first of the British Bahama Islands.

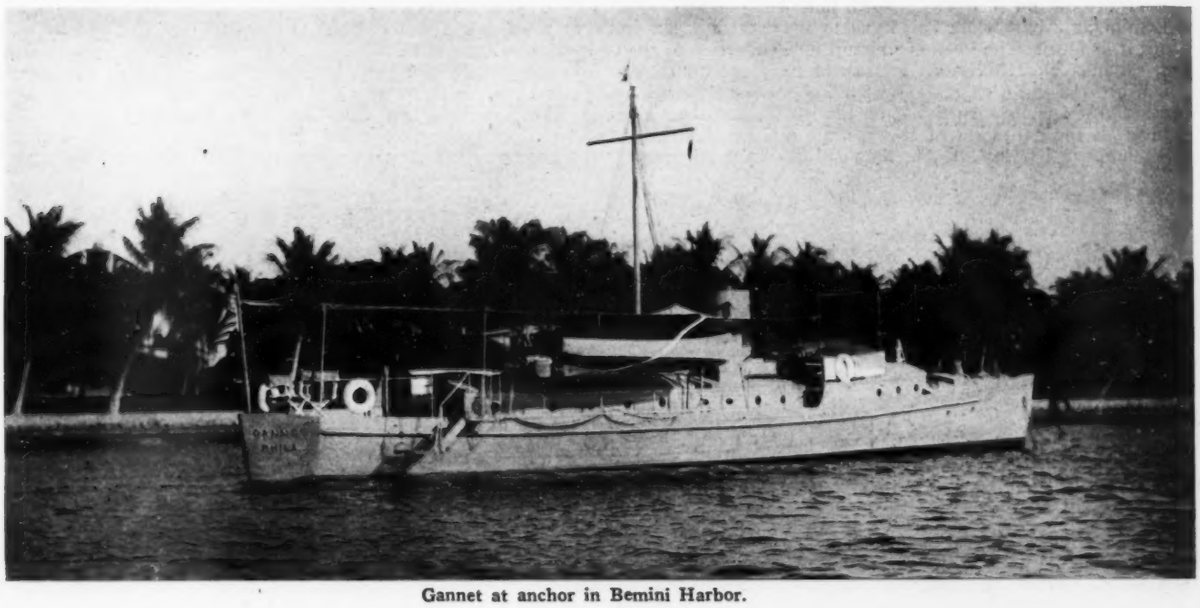
This course with the southeast wind, which prevails, allows enough for the leeway you will make and the rush of the mighty Gulf Stream to the northward, which is indeed mighty and demands profound respect from all seafaring people.

If you are in luck and things go right, you should pick up the "Red Eye" on Gun Key before day. Keep it on your port bow and sail right in close, but wait for good daylight before attempting to go in. Favor the Gun Key side of the entrance and the deep blue water, as there are great bunches of rocks on the Cat Key side of the channel. Don't fail to have your ensign ready for a salute, whether before eight o'clock or not, as the lightkeeper on Gun Key has seen you long before you see anything but the light, and is always ready with his big blue British ensign at the truck of a lofty spar, to dip to all yachts, large and small, a courtesy he always extends and expects to have returned.

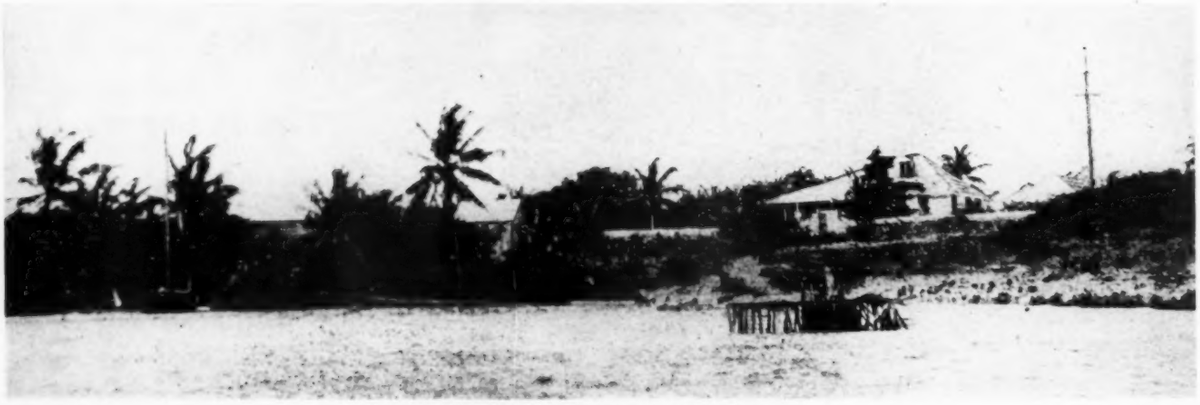
On Cat Key, which lies just south of Gun Key, was the home of Mr. Haigh, a charming English gentleman who died last winter in the cabin of his sloop en route from Nassau to his home. His care-taker, a "Bahama Conch" negro, with a jet complexioned wife and numerous ebony pickaninnies, large and small, will take pride in showing you Mr. Haigh's bungalow built of drift and beach combings, with its signal spar and look-out on the roof. He will also get you all the craw-fish you can use, both on your table and for bait, in the rocks of a miniature breakwater, which makes a snug little anchorage in any weather.

Then, if you are a little in doubt regarding the route up to North Bemini, he will take you up for a two dollar bill and sail home in his own little dinghy, which you can tow up for him. To enter Bemini Harbor safely, one absolutely requires a pilot, but the man from Cat Key knows the way in, and if you pay strict attention, you can find your way out when you are ready to leave.

Of course, you must clear from Miami and get your clean Bill of Health, for Mr. McDonald, who represents the Colonial



Gannet at anchor in Bemini Harbor.



Mr. Haigh's bungalow on Cat Key.

government and who will receive you at Bemini, will ask for these papers before he even says "Good morning," and after they have been examined and found to be all right, he will make it very pleasant ashore for you.

Don't forget your very best fishing tackle, for Bemini Harbor is long and deep, and abounds with tarpon, horse-eyed mackerel, groupers, snappers, amber jack and sharks. The latter really make bathing impossible, except in a delightful little cove near the west end of the town, where the water is about four feet deep, enough indeed to take a cooling off twice a day.

Night is the best time to catch sharks and on the first half of flood tide. A good tin lantern with a reflector, and a man with a high power rifle, add to the excitement, and are quite necessary. I am afraid "Gannet's" company kept the sleepy little village of Bemini awake till after midnight many nights with hoarse shouts and the barking of automatics, but the people hate the sharks and fear them, and they were glad to be kept awake when they knew the cause of the disturbance out on their usually still harbor.

Gannet's business-like bow headed up Bemini harbor.

Bemini, as a harbor for small yachts not exceeding six feet of draft, is ideal. The town is a picturesque collection of shanties, set in a most luxurious growth of lofty cocoanut trees, which grow along a ridge. There are about six hundred negroes and six white men living on the island, and their chief industry is the gathering of shells, large and small, sponging and "wracking" (wrecking) as they call it. Take all your old clothes and shoes with you; the things you are going to throw overboard or use for swabs can be traded for boxes of beautiful shells and coral. I once traded a pair of worn out sneakers (right on the street), for a string of beautiful sponges, and went back to the "Gannet" in my socks, but caused no particular sensation during the transaction.

On South Bemini, the adjoining island to the south of Bemini proper, is to be found Ponce de Leon's spring, which that old Spaniard named "The Fountain of Eternal Youth," all of which sounds romantic, but I guess the old discoverer was hard up for water when he found it, if he really did.

Before you leave Bemini, go to Mr. MacDonald's office and get your clearance for Miami and shape your course west by south, which will bring you up with the old tower on Cape Florida, and if the weather is good, you can bend her off to starboard a little, and pick up a big white beacon called beacon "H," whence you can see the jetties on the new ship canal.

We left Bemini at 5:30 A. M. in light S. E. weather, and by 6:30 it had breezed up from the S. W. with rain squalls; at 7 we saw a water spout in the Gulf Stream, and by 9 it was howling out of the N. E. At 10 A. M. we were tied up to the Royal Palm Dock at Miami, after going to the custom house, where there was a slight delay.

For a week's trip from Miami, I consider that to "The Beminis," as they are called, one of extreme interest. Fishing is good and the people are different from ours at home.

On the run to Bemini—the first land sighted.

Photographs copyright by Underwood & Underwood.

Unloading briquettes at Bridgetown, Barbados.

The harbor of San Juan, capital of Porto Rico.

By Motor Boat to Trinidad.*

A Two-Months' Cruise from Palm Beach to Port of Spain Through the West Indies and Windward Islands.

FLORIDA is the winter Mecca for the motor boatmen of the North and many there are that make the pilgrimage. Some ship their craft; others cruise down the coast or go by the inland water route, but it is strange that of the number who make the trip, there are so few who venture farther.

Elsewhere in this number the route from the North to Florida is dealt with at length, but there is a logical continuation of the trip that comparatively few undertake; a natural course to the Island of Trinidad and the mouth of the Orinoco, by way of the West Indies and the Windward Islands. This archipelago, forming as it does a continuous chain connecting Florida and Venezuela, offers exceptional opportunities to the motor boatman with several months to spend. It would be hard to find a more desirable place to cruise or one that offers greater diversity of interesting conditions. The negro republic of Haiti, the British, French, Dutch and Danish islands of the Lesser Antilles, besides our own Porto Rico, all offer much that is new and interesting to us of the North. All these languages are spoken besides Spanish, and such an intermingling of races could scarcely be found anywhere else in so small a territory.

To make the trip from some point in Florida to Trinidad and return, and to give it the time that it deserves, the greater part of three months should be allowed, and therefore, to be sure of the best weather the start should be made early in January. It would not be advisable to make the trip in a motor boat much under 55 to 60 feet in length, although seaworthiness is not by any means a question of size. The boat should be decked over, however, for an open cock-pit is liable to take in more water than the scuppers can handle, resulting in a wet cabin if in nothing worse. A small rig of some kind is not a bad thing to steady a boat in a seaway when the screw is out of water a good percentage of the time and might well be carried, although in this day of reliable engines, it is not necessary as a supplementary means of propulsion.

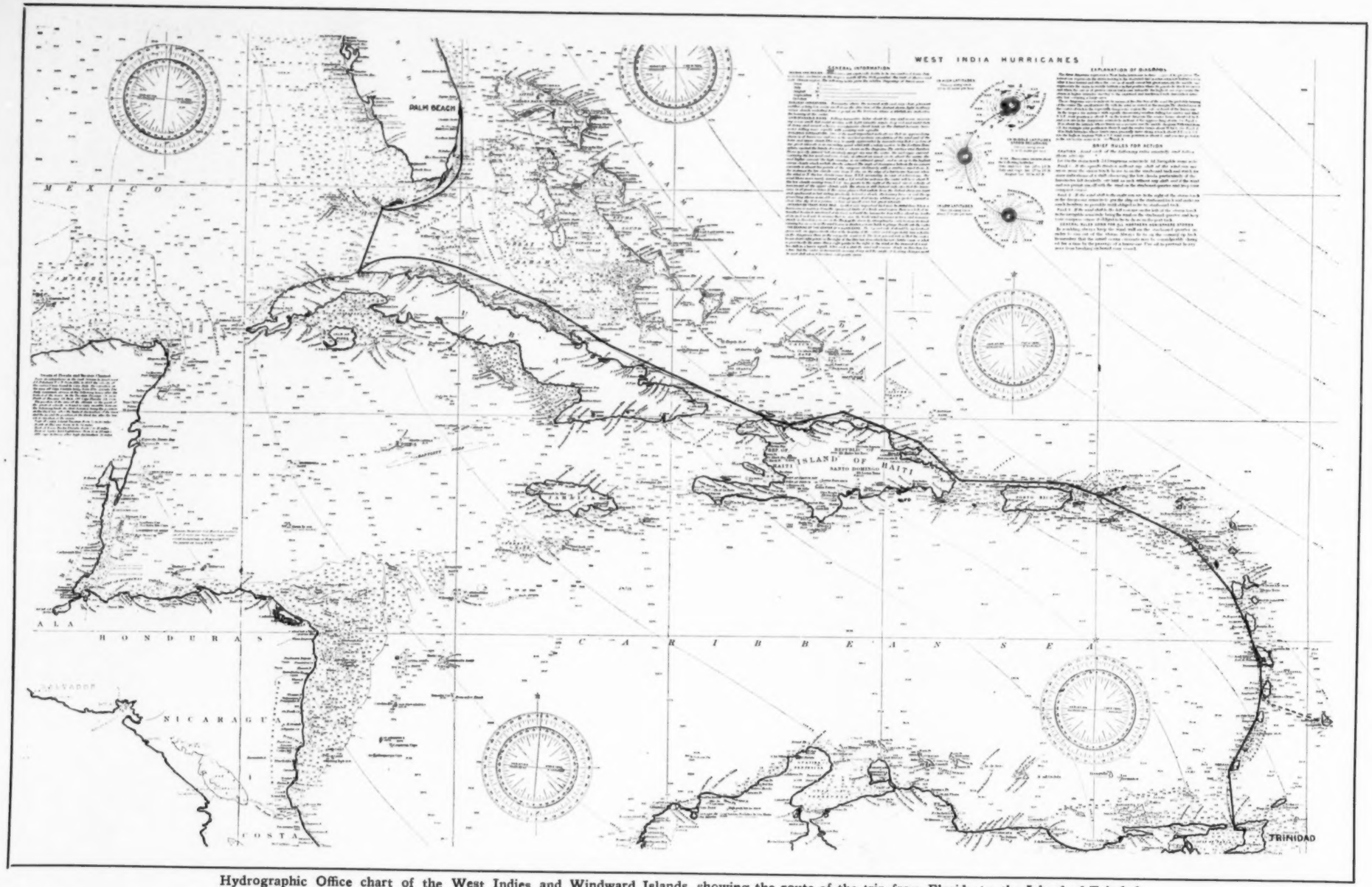
Throughout these southern waters shoals are frequent and consequently the propeller or propellers are always in danger. As a precaution, therefore, it is advisable to carry a spare propeller, and also a kedge anchor, for warping the boat into deep water in case of running aground. As a special equipment for southern conditions the boat should carry an ample refrigerator, and fresh water tanks with a capacity of not less than 250 gallons, as ice is scarce, except in the principal ports, and it is not always easy to obtain good drinking water in the tropics. A little lime dropped into these tanks from time to time will keep the water from becoming stale. Mosquito netting or brass screens for the ports, besides wind scoops and wind sails are also necessary. It is needless to say that the regular equipment for a cruise of this kind should include a 12 or 14 foot tender, a set of two anchors suited to the size of the boat, with not less than 45 fathoms of chain for one and an equal length of rope cable for the other; a lead line and lead, bell, horn, regulation side lights, two compasses, a patent log, charts and a tide table, together with a sea-anchor and oil bags or material from which they may be made.

Fresh fruits, vegetables, fish and even meats can be had at any of the ports and therefore it is not necessary to load up with provisions. However, a good stock of canned vegetables, soups, evaporated milk, etc., should be taken, as these do not deteriorate and are easily prepared.

Gasoline can be had at any of the larger ports of Cuba as there are refineries on the Island. Haiti is not to be depended upon, although a limited supply is shipped to the Republic of Santo Domingo, on that island. Porto Rico is, of course, well supplied. There are stations of the West India Oil Company on the islands of Trinidad and Barbados, but the intermediate Windward Islands are not so well supplied. There is an ever increasing demand for gasoline in these islands, however, as many of the wealthy planters are ordering motor boats and a 65-foot boat of say 50 horse-power, equipped with tanks of 400 gallons capacity, should be able to make the longest run between stations with a fair margin of safety.

The itinerary of the trip from Palm Beach say, to Trinidad, roughly is as follows: leaving Palm Beach follow down the coast and Florida Keys to Key West, thence across to Havana; from Havana along the north coast of Cuba through Nicholas Channel, keeping outside the Keys except for shelter in bad weather, and stopping at any or all of the good harbors along the coast. Matanzas, Cardenas, Sagua la Grande, Nuevitas, Puerto de Manati, Puerto del Padre, Gibara, Puerto de

*For much of the information in this article we are indebted to Capt. Chas. D. Yborra, who has done much cruising in these waters.



Hydrographic Office chart of the West Indies and Windward Islands, showing the route of the trip from Florida to the Island of Trindad.

Copyright by Underwood & Underwood.

Bird's-eye view of Aguadilla, Columbus's landing place on the Island of Porto Rico.

Banos, Bahia de Nipe and Baracoa are all good ports and there are many more of less importance but equally interesting.

In clear weather you can see the Island of Haiti from the eastern end of Cuba. Port au Prince, the capital of the Republic of Haiti, is an interesting town but as it is 100 miles out of the way and is usually in a political turmoil it is hardly to be advised. Poft de Paix and Cape Haiti and Porto Plato in Santo Domingo are all good ports.

Crossing to Porto Rico, Aguadilla, while not a very good harbor, is quite an interesting small town, and was Columbus's first landing place on the island. San Juan, the capital of Porto Rico, and the largest town on the island, is a Spanish town. It has a fine harbor, theatres, hotels, etc., and is well worth a visit of several days. After leaving Porto Rico head for the Island of St. Thomas of the Danish group, which has a splendid harbor and is a coaling point for many large vessels.

From St. Thomas the route lies to the southeast along the inside of the curve defined by the numerous British islands, to the French island of Guadeloupe; thence to the islands of Dominica, Martinique, St. Lucia, St. Vincent, St. George and finally to Port of Spain on the Island of Trinidad. Barbados is a hundred miles east of St. Vincent, but is the principal island of the British Windward Islands, and is well worth visiting.

The course as outlined covers between twenty-five hundred and three thousand miles and lies within sight of land for practically the entire distance. Good harbors are numerous all along the way, with no very long runs between them. Furthermore the weather during the months of January, February and March is the best of the year, and it is seldom that a severe storm occurs during this period.

From six weeks to two months would be necessary for the trip down depending upon the time made, the number of stops, etc., and, instead of following the same route on returning, that by way of Jamaica, passing to the south of the islands of Porto Rico, Haiti and Cuba would be but very little longer and well worth the extra distance as the British island of Jamaica is one of the most interesting islands of the West Indies.

The route following along the coast of Venezuela and Columbia to Panama and thence along the coast of Central America and Mexico might even be attempted, but this route is a great deal longer and should not be attempted except with a large boat thoroughly equipped for extended cruising.

The charts necessary for the trip from Palm Beach to Trinidad by the course outlined are as follows:

For the lower coast of Florida and for the Island of Porto Rico the following C. S. (Coast Survey) charts:

15 Straits of Florida and Florida Bay to Havana (small scale).
164 Jupiter Inlet to Hillsboro Inlet.
165 Hillsboro Inlet to Fowey Rocks.
166 Key Biscayne to Carysfort Reef.
167 Elbow Key to Matecumbe Key.
168 Long Key to Newfoundland Harbor Key.
169 Newfoundland Harbor Key to Boca Grande Key.
469 Key West Harbor.
920 The Island of Porto Rico.
903 North coast of Porto Rico.

For the rest of the territory the following H. O. (hydrographic office) charts.

1290 General chart of West Indies (small scale).
2145 The Island of Cuba.
2298 Approach to Havana harbor.
307 Havana Harbor.

Note: Harbor charts of all the harbors to be entered should be included. Their numbers may be obtained from the H. O. catalog and will not be included in this list.

946 Eastern end of Cuba with north coast of Haiti.
948 Connecting Haiti and Porto Rico.
40 Porto Rico and Windward Islands.
1002 Anegada Passage, with St. Thomas, St. John, Tortola, Virgin Gorda, Anegada, Saint Croix, Sombrero, Anguilla, St. Martin and St. Bartholomew Islands.
965 Virgin passage with St. Thomas and adjacent islands (large scale).
1832 St. John, Tortola, and Virgin Gorda Islands.
1834 Anguilla, St. Martin and St. Bartholomew Islands.
1011 St. Eustatius, St. Christopher, Nevis and Montserrat Islands.
363 Guadeloupe and adjacent islands.
1318 Island of Dominica.
1009 Island of Martinique.
1261 Island of St. Lucia.
1010 Island of Barbados.
1279 Island of St. Vincent.
1640 Grenadines.
1316 Island of Grenada and harbors.
1618 Island of Tobago.
1005 Island of Trinidad.

Copyright by Underwood & Underwood.

Interesting shipping in San Juan harbor.

The Inland Route to Florida.

New York to St. Augustine, Palm Beach and Other Southern Points Through Sheltered Waters. Practical Directions and Suggestions for Those Who Would Make the Trip.

By Capt. Harry Stephenson.

THAT there is an inland water route from New York to Florida is not as generally appreciated as it should be. While many motor-boatmen have made the trip by this route, and many more know of its existence, they are but few compared to the number that could, and probably would undertake the trip if they knew the exact route and had instructions for following it.

In this article Capt. Stephenson has not attempted to write a narrative, as space would not permit it, but has stuck to the bare instructions compiled from the experience of his many trips.

Leaving New York pass through the Kills to Perth Amboy, up the Raritan River, keeping in the bends to New Brunswick. Here you get pass at canal office to enter the Delaware & Raritan Canal. Vessels loftier than 50 feet will have to send their masts down to get under the railroad bridge. There are 44 miles of canal with 14 locks. Locks are 210 feet long 23 feet wide. At Bordentown give up your pass and lock out into the Delaware River. On leaving the lock steer about S.S.W., leaving a red and black buoy to starboard. The Delaware River is well buoyed from here to Delaware City, where you enter the Delaware & Chesapeake Canal. Follow the tow path side at a distance of about 50 feet; speed is limited to 4½ miles per hour. There are three locks, 220 feet long, 24 feet wide. At Chesapeake City you lock out into Back Creek. Keep in the middle favoring the bends a little until you enter the Elk River; from here down Chesapeake Bay to Norfolk use the chart.

From Norfolk pass through the southern branch of the Elizabeth River seven miles to Deep Creek. The paint on the buoys is generally scraped off in this stretch and care should be taken to leave them on their respective sides. Pass up Deep Creek three miles to the first lock of the Dismal Swamp Canal. This canal is 22 miles long to the South Mills lock. There are two locks, 250 feet long, 39 feet wide. You now pass through Turner's Cut and the Pasquotank River to Wade Point, Albemarle Sound.

Use the chart from here to Harbor Island Light, the entrance to Core Sound. The bar here is changeable. If you draw more than three feet, anchor at the buoy off the Light, signal the keeper and he will take you over. From here to Beaufort the channel is very crooked, it is supposed to be marked with pointer stakes. Generally some of the most important stakes are down and it is worth the pilot's fee of $10.00 to be taken through. Most all the fishermen are good pilots or one may be had by telegraphing ahead to Beaufort. He would meet the boat at Harbor Island. (If a stranger is going through alone, he must follow the chart).

Arriving off Beaufort leave both beacons to port close to. Follow close to the shore of Bound Island until you look right up a street, then steer off and follow close along the docks and anchor just so you will swing clear. Bogue Sound is about the same as Core Sound and it is advisable to take a pilot if going through to Bogue Inlet.

Where the banks are overhung with foliage.

Leave Beaufort sea buoy, steer S.W. ¾ W. to Cape Fear, 82 miles. Keep about one-fourth mile off the beach and pass over Frying Pan Shoals in 18 feet of water. Small boats should follow the beach and should have a local pilot aboard who could take them into any of the numerous inlets along the beach from Beaufort to Charleston. Follow the chart up to Southport. The channel is well buoyed and ranges can be run to carry you in.

In Dismal Swamp Canal.

From sea buoy off Southport steer S.W. ¾ W., 67 miles to sea buoy off Georgetown jetties. The channel from here to Georgetown can easily be followed by the buoys. Small boats can go inside from here to Charleston but would not advise large able ones to as the water is bad and one has to work the tides. On leaving sea buoy off Georgetown, steer S.W. ½ S., 19 miles to channel buoy off Cape Romain then S. W. by W., 34 miles to bell buoy off Charleston. Follow the chart up to the city.

Run up the Ashley River about one mile to a red beacon at the mouth of Wappoo Creek. Leave beacon to starboard and steer into the creek keeping south side bend aboard until you pass through the draw-bridge. Now keep in the bends passing through New Cut and Elliot's Cut into the Stone River. Steer W. ½ N. along S. bank for about one mile. Cross over to N. side till abreast of a fertilizer factory. Keep out of this bend and follow the left shore. Keep in middle of next bend and steer for point on port bow leaving it 50 yards off.

Follow left shore. When river opens up, N.W., cross gradually to right shore, steer for factory in next bend. Just before coming to factory cross over to left shore again. From here to Church Flats keep in middle of river. Leave first buoy to starboard, second to port. Keep in middle until you pass Church Creek. Keep to left bank, pass close to north side of small island and steer for black beacon, leaving it to starboard close to. Leave next black beacon to starboard about 100 feet distant. Gradually haul around and leave next beacon (red) to port. Steer down along bluff banks on left side until in middle of bend. Now keep in middle and follow next bend around. Pass close to docks at Youngs Village. Pass about 20 yards to south'ard of small island until Martin's Point opens up bearing S.W. by W. Steer for it passing about 50 yards distant. Follow the bend, gradually hauling to left bank. Pass close to a dock and steer W.S.W. for a low island.

Steer about S.W. crossing the North Edisto River. Follow right bank until the Dawho River opens up to the west'ard. Keep fairly close to White Point. When well inside steer

for black beacon on Marsh Island, pass to starboard. Leave next three red beacons to port and black one to starboard. Steer about W. ½ S., then follow right bank. As the river narrows keep in the middle, passing the mouth of North Creek, the only creek of any size, on the left, until you reach the South Edisto River.

Here the water widens out. Follow the left shore, when abreast of a small island steer S.W. by W. ½ W., to opposite side. There are ranges here to cross on. Follow right bank, keeping close to point on starboard side. Keep across to left side. Steer for mouth of a small creek on right side. Follow this side for a little over three miles. Keep in the middle, gradually hauling over to right bank, shoot across in the next bend to the left bank, pass a house on this bank and keep in the middle across the next bend. Follow the right bank until you open up a canal which takes you into the Ashepoo River. Steer down middle of river, leaving red buoy to port and black to starboard.

Give red beacon ahead a berth of 100 yards, and if tide is one-half flood take Station Creek route as follows: (Regular route is via Beaufort as per next following paragraph):

Steer S.E. five miles to first channel buoy, steer S.W. by W., two miles, N.W. 1½ miles, gradually hauling to W., keeping the rip on the shoal close aboard on the port hand. Steer up the middle of Harbor River. Pass through Story River, Trenchard's Inlet and Station Creek which brings you into Port Royal Sound.

When red beacon bears N.E., steer N.W. by W. ¼ W. until the Coosaw River opens up across the end of Morgan's Island. Steer W. ¾ S. Follow the buoys up the river until you pass red nun buoy No. 6 to a red and black nun. An old boiler lies on the beach ahead. This is the entrance to Brickyard Creek. Pass about 50 yards off this point and steer for a dock ahead; leaving it about 20 yards off, steer about S.W. to a point ahead. Pass around the point about 20 yards off. Keep in the middle and follow close in the bends. After passing Beaufort the Beaufort River is buoyed and no trouble

At sea; Beaufort to Southport.

will be experienced until you enter Skull Creek. When black beacon off Skull Creek is 100 yards ahead steer S.W. by S. ¼ S. into the creek. Follow the right shore 20 yards off leaving first beacon to port close to. Steer about S.E. by S. ½ S., and gradually swing around, leaving next beacon to port. Leave the next to starboard close to, steer S.W. ½ W. along south shore of a small island and steer for dock seen ahead. Keep in the middle and then along the right bank.

This brings you into Calibogue Sound. Leave nun buoy No. 2 to port. Follow the east shore about one-fourth mile off. Haul out to the W. When the S.W. end of Marsh Island is abeam, steer S.W. ½ W. for the mouth of the Cooper River. Follow the right bank for two miles, then haul across to the left. Follow the left until you make Ram's Horn Creek on the left. Keep in the middle. Coming out of Ram's Horn Creek keep along left bank of New River until a creek opens up to the left. Cross over to right and enter first creek on that side. Follow right side until Mud River opens to left. Cross over directly opposite and go through Mud River.

This brings you into the Savannah River. Run up to west end of Elba Island. When abreast of nun buoy No. 12, run down through a break in the piling. Follow along the Elba

The locks are of generous size.

Island shore until abreast of St. Augustine Creek. Steer across when opposite, pass through the draw, keep in the middle and follow the bends. When abreast the Savannah Yacht Club at Thunderbolt keep to the left bank.

Go down the Wilmington River to Skidaway River. Up Skidaway River to the Narrows. These Narrows are very crooked, have been recently dredged and have ranges to run through on. Plenty of water and no trouble.

You now run down the Burnside River into the Vernon River. Run down past Hell Gate before hauling into it. Keep about 20 yards off Raccoon Key. Keep well out into Ogeechee River before hauling up. Keep 50 yards off right bank.

Follow this shore until Florida Passage opens ahead. Run across and keep in the middle and follow the bends. Pass down Bear River. When the waters of St. Catharines Sound open up steer S.E. by S. for red and black buoy. Leave buoy to port and steer S.W. for Walburg Creek. Keep in the middle until just before entering Newport River, then keep close to right bank, keep along left bank of Newport River and pass through middle of Johnson's Creek. Keep to left bank just before leaving. Follow left bank and steer about S. by W. for red and black buoy in Sapelo Sound. Steer W.S.W. for red buoy No. 2 at mouth of Mud River.

Run the ranges going through here which brings you into New Teakettle Creek. Keep in the middle. After rounding red buoy No. 8, Doboy Sound, haul up N.N.W. for right bank of North River. Pass by old abandoned mills and cross over following the eastern shore until up with range No. 2, now steer N.W. for range on small island on south side of Altamaha Sound. Pass along west side of this island until you can steer W. along S. side Buttermilk Sound. Cross over to Broughton Island side. Follow this shore until beacon No. 6 is abeam. Steer S. by E. ½ E. for point on opposite shore and enter the Frederica River. Keep in the middle and follow the bends.

When abreast nun buoy No. 8 in St. Simons Sound steer S.W. by W. till ranges line up at mouth of Jekyl Creek. A jetty makes out to the westward of the entrance and should be left on starboard side. Keep in the middle. As the creek widens up cross on the ranges and keep down the middle with Jekyl Island best aboard.

On opening up St. Andrews Sound steer for red and black beacon, leaving it to starboard. Haul down for Little Cum-

(*Continued on page 64.*)

Tied up at the end of a day's run.

Cruising In British Columbia Waters.

Being the Account of an Unexpected Trip By One Who Was Kidnapped. From Vancouver, B. C., Northwest Through the Strait of Georgia.

By Frank M. Foulser.

(Continued from Motor Boating for November.)

WE went ashore soon after anchoring to see what the town of Lund had to offer in the way of the conveniences of civilization. Gasoline and supplies of all kinds may be obtained and a very competent boatbuilder has a machine shop remarkably well equipped for repairs of all kinds. The prices of provisions are rather high, and mixed drinks are not yet in vogue, but the climate must be very invigorating, judging from the enthusiastic log splitter on shore who kept us awake till nearly midnight. Larry was seized with a great admiration for the country that would produce a man who could work all day in a lumber camp, come home, milk the cows, eat two suppers, beat his wife and chop three cords of wood as a preliminary to a good night's rest. Alongside Tuscora, which had left us at Powell River, was entertaining the natives with a phonograph concert of grand opera. We turned in early, setting the alarm clock for 3:30, but I was awakened at midnight by the big gasoline mail boat which brings freight and passengers to Lund three times a week.

At 3:30 A. M., on Wednesday, Aug. 11th, the alarm clock went off with a bang. The skipper jumped and so did I, but the rest of the crew simply groaned and rolled over. It was still dark as the anchor came up over the side and we cautiously felt our way out of the harbor and headed for Baker Passage to get the advantage of the tide. This portion of the course calls for some little navigation, being dotted with submerged reefs, and subject to sudden heavy weather and swift, treacherous currents.

Daylight was just dawning as we rounded Tongue Point, a wonderfully beautiful projection of Hernando Island. Back of us the Selkirks were just being outlined against the sky, their saw-tooth serrations looming up in the wonderful blood-red light like scenery from the most vivid of Belasco's productions. Charlie was sleeping on the floor of the cock-pit. From his starts and voluble exclamations every now and then, he must have been refighting the Japanese-Russian war. It was pretty chilly, so I started the blue flamed Primus and in a short time had some coffee and bread and butter ready for interior fortification. Although our destination was for Cape Mudge at the southerly extremity of the Valdez Islands, we had to lay a course almost due south to clear Reef Point which juts out from Cortes Island on the northerly side of Baker Passage.

The Skipper goes aloft to reeve the throat halyard.

As we cleared the Passage and worked out into the Straits of Georgia again, the breeze commenced to stiffen and by the time we got to Cape Mudge, the draft down the draw (as the Discovery Passage channel between Vancouver and Valdez Islands is called at this point), was something distinctly appreciable. Sweaters were extremely welcome. Here we came upon a fleet of Indian dugouts, whose owners were trolling for cohoes—a small, rather inferior salmon. Coming down the draw with their patched sails bellying and pulling them along on their flat runs with exhilarating speed, I almost envied their occupants. When the rest of the crew finally tumbled shamefacedly on deck they were surprised to see how near our destination—the famous Campbell River—we were. At seven o'clock we anchored off the Campbell River Hotel where there was already moored a fleet consisting of Bertha, an auxiliary yawl owned by Mr. J. P. Roberts, of Vancouver, the motor cruiser New Zealand, one of the contestants in the Vancouver-Seattle race for 1909, and Swift Sure, a powerful looking glass-cabin launch.

The Campbell River is one of the most famous fishing places in the world. Hither some of the most enthusiastic of the big game fishermen make an annual pilgrimage from all over the globe. Their quarry is the tyee, royal chinook, spring, king, Sacramento or any other of half a dozen names which you may care to apply to the gigantic, silver-armored salmon which in this particular locality condescends to strike at a troll. Although during the three days our party stopped here, I saw any quantity of the big fellows captured, not one of our group succeeded in landing even a solitary cohoe. This I can only attribute to pure hoodoo, as at least two of our party were accomplished fishermen.

There are two hotels, and as soon as we had had breakfast Uncle Fred and I went ashore to investigate. Ever since we started Uncle Fred had been anxious to dig clams, and as the spurts of water from the tideless beach indicated an abundance of shellfish, he soon had a bucketful. I found the hotel infested by English looking individuals togged out in knickerbockers and khaki. One of them—a Mr. Martin—who was spending his third season, had just captured a 55-pounder, of which I secured a snap-shot. We learned that there were some Seattle and other boats anchored in the mouth of the river itself about two miles further on, so we decided to join them.

As we stemmed the strong current, the big salmon were jumping all around. The splash of a 60 or 70 pound fish jumping suddenly within a few feet of one's boat is rather startling. Just beyond an Indian graveyard, over the portal of which perched a huge carved bird—the totem of the tribe—we passed the yacht Minerva of the Royal Vancouver Yacht Club anchored, awaiting the turn of the tide to get into the river. It was too early to cross the bar which blocks the entrance, so we spent our time in watching the wonderful panorama of submarine life spread out beneath. The clearness of the water intensified everything. To an incredible depth were revealed wonderful growths—almost as marvellous as those of far-famed Catalina. Golden cod flashed in and out of the miniature forests of kelp; flounders and sole big as monstrous platters scaled across the field of vision; shadowy black cod lurked in the dark places; muscular salmon propelled themselves with scarcely a visible effort of their broad tails through the marine highways. I baited a jig with a piece of clam and watched it sink down down to the sandy bottom. A lively cod darted from his hiding-place and grabbed the bait, fighting the barbed hook desperately all the way to the surface. With a single slash across the jugular Charlie ended its suffering. With quick, deft strokes of the sharp knife, he erased the back and side fins, slit the belly, stripped it clean and flung slices of the still twitching muscles into the waiting frying-pan. No complaint was registered that this particular fish was not fresh. By the time the skipper and Larry had returned from a brief row, lunch was on the table. The nectar from Uncle Fred's clams, the steamed clams themselves and the freshly caught fish constituted our repast.

The tide had by this time risen high enough for us to cross the bar and over we sailed while the trumpeter on the Minerva

Restless, of the Seattle Yacht Club, winner of the fourth prize in the Seattle-Vancouver Race of 1908.

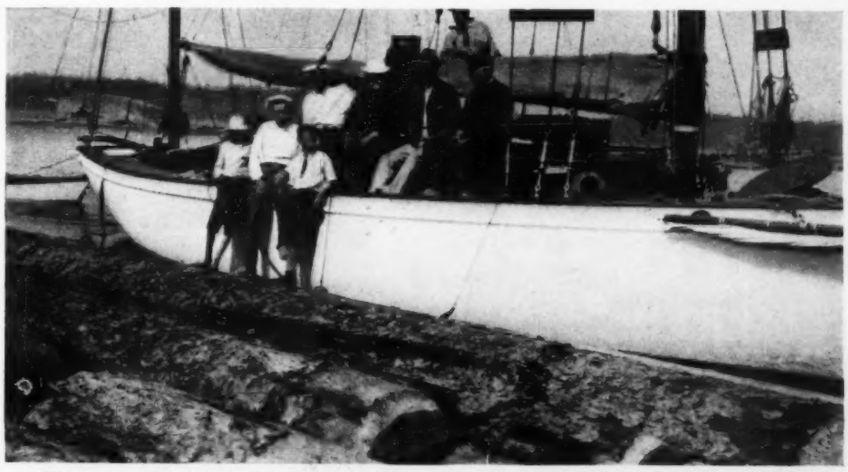
played the Star-Spangled Banner in our honor, a bit of pleasant courtesy which we recognized by dipping the ensign and giving three "lusty British cheers." Inside we found the motor yacht Widgeon of Seattle and a yacht from Victoria. We tied up near them to a boom of logs which were awaiting the arrival of the next tug to tow them to Vancouver.

For the next three days we remained anchored here. Morning and night on the turn of the tide, some of us joined the fleet of rowboats which promenaded slowly back and forth across the mouth of the river. Most of them were stroked by professional guides who receive $3 or $4 a day for their services. In this sport we had no success, but in various trips up the river we fared better, the boys returning with nice messes of trout and tales of beautiful scenery. For the sake of those who come after us it might be well to relate our experience in the matter of fishing licenses. The skipper had been very particular to inquire in Vancouver what was necessary in this matter. He was told that it would be impossible to obtain any license to shoot in spite of the popular belief that a miner's license covering the shooting of game for food purposes can be taken out by anyone. As to fishing, he was informed that the only licenses necessary were those issued in consideration of five dollars by the Dominion government. These he procured, but shortly after we landed at the Campbell River we were boarded by an officious gentleman in a white and black blazer, who assured us that as a representative of the Provincial government he was there to collect $5 from each of us before he would permit us to fish. As he seemed so absolutely certain that his was the only dyed-in-the-wool brand of licenses we came across, but ever since then we have been wondering.

Later Minerva came in, together with Bertha, and Skookum, a strongly built 35 footer owned by a Mr. Lane of Cowitchan. The crew of Bertha made the best record in the matter of tyees. One of their catches for a single afternoon on two rods was a 56 pounder, a 40 pounder and three others weighing over 30 pounds each. It was aggravating. The depths of our degradation were struck when the skipper and Larry after three hours of fruitless trolling started after an Indian dugout whose owner they had bitterly watched pulling in fish after fish. The Indian saw them coming and started to paddle away. They rowed harder. Redman redoubled his efforts. Finally after a long stern chase they overhauled him and enquired what he would take for one of the smaller fish. "Me no sell," was the humiliating refusal which they met. Meanwhile I had secured a donation of a big fish and for some little time succeeded in palming it off as my own catch to the utter disgust of the others.

It rained most of the time we were there, so that most of my kodak pictures were spoiled. One day we visited the Indian village and returned laden with wonderfully woven baskets. Uncle Fred became afraid to go out and dig clams any more lest he be arrested for not carrying a clam digger's license. Our evenings were spent in long winded discussions on the Oriental question or the causes of the civil war or what influences values in real estate. One pleasant break in our daily routine was the visit of Mr. and Mrs. Wise of Victoria. These two good fellows—for Mrs. Wise is just as much of an outdoor enthusiast as her husband—have fished and hunted together for years. Recently they came out from England and took up motor boating as a pursuit. They spend the greater part of the year in their open 30 footer pitching their tent wherever the fancy seizes them or varying their out door existence by visits to the various coast or inland cities. Our first glimpse of Mrs. Wise was in a canoe shooting the big rapids of the upper river with an old Indian guide, who wanted to know if Mr. Wise was the only husband she had ever had. Rainier, a big 80-foot gasoline motor yacht, belonging to Andrew Hemmerich of Seattle, stopped in en route to Alaska, but only stayed a few hours while her guests went fishing. . On Saturday, Aug. 14th, we decided to move on. Uncle Fred was compelled to leave us at this point and took the steamer back to Vancouver. Minerva, Widgeon and Bertha had already departed.

About 4 o'clock in the afternoon we slipped cable ourselves and headed across Discovery Passage to Quathiaska Cove, the site of a post-office and cannery. It was still raining when the anchor struck bottom, but we ducked between showers and made for shore. A boy on the wharf was catching dogfish. One of the Chinamen from the cannery came out just as the youngster landed a big female on the chunk of salmon he was using for bait. The Chinaman opened the fish and released seven little dogfish each of which wriggled happily away with its yolk sac floating behind like a miniature balloon. Fluff and I decided to walk across the island to the home of a friend. The way led through the woods—a comfortable wagon trail winding in and out among huge firs and ferns drenched with the rain. The smell of it was crisp and pungent. It was an exhilarating change after our week of salt water.



The crew of Minerva in the Campbell River, with "King Edward" (Mr. George Thompson of Vancouver) in the center.

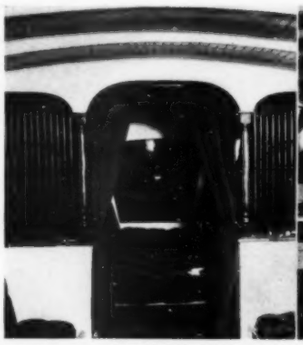
Just as we arrived at the house a deluge struck the land. It rained in buckets. A creek which had been dry as we came across the island was flowing with a raging torrent on our return. Although our acquaintance was away, the other members of the family were at home. With true British hospitality they plied us with tea and cakes. When we came away Fluff bore a pail of eggs and a basket of vegetables, while under each of my arms rested a huge cake. As we passed a field of grain one of the boys who had volunteered to accompany us back, pointed out the ravages of the deer which had grown so bold as to actually be a nuisance.

"We will have to shoot one to-night," he said, "one that has been particularly annoying. Don't you want to watch us?"

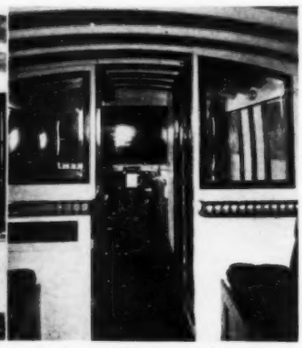
The idea appealed to me, so after we had taken our load of welcome provisions to the boat, I returned with the boys. We went to bed in the loft of a work shop. It seemed as if I had slept scarcely a quarter of an hour when I was awakened by a tug at my wrist. I sat up and gazed around trying to accustom my eyes to the dim light of dawn. A figure stood silhouetted like a statue in the window. I caught the glint of light along a rifle barrel. He motioned to the other window. I crept over and looked out. A stag just in the velvet was feeding off the tender stalks of young wheat, pausing now and then to lift its head, scenting danger but not seeing it. Suddenly it turned to go. With a crash that awakened the echoes for miles around the 30-30 sent its message. The deer made two magnificent bounds, then sank into the covert. The metal capped bullet had exploded in its brain. We rushed out to cut its throat, heedless of the fact that our pajamas were poor protection against the rain drenched wheat. A cloud of mist rose above the field. Steam ascended from the blood that poured from the poor creature's wounds. It was not sport. I found myself shivering suddenly with cold and disgust. It was so different from hunting in its more favorable aspects. I went back to bed half ashamed.

About nine o'clock Philistina got under way with the turn of a favorable tide, and having rounded Cape Mudge, drew up alongside of the farm house where I had spent the night, and the crew signalled for me. The wind was breezing up very fresh, which made landing on the rocky, shallow beach a difficult matter. We took one of the boys with us as guide and with the wind pushing us along at good speed passed Heriot Bay and anchored in the innermost corner of Village Bay. It was two o'clock before we got dinner out of the way. Then all five of us climbed into the dinghy and rowed across the bay to a deserted flume which marked the entrance of a river. Climbing along the flume and wading for about a mile upstream we came to Village Lake. Just before we got to the lake, we had to cross a dam. At the foot of this dam was a small but deep pool so full of salmon which had mounted the river to spawn that you could not have shot a bullet into it without killing two or three at least. They paid no attention, however, to a fly which Larry flirted temptingly across the surface. Fluff, wading upstream intent on lashing a riffle, lost his balance and sat down abruptly. Just as I started to snap-shot him a treacherous pebble proved my own undoing.

The auxiliary yawl Bertha, of the Royal Vancouver Yacht Club.



The forward sleeping compartment of the Philistina, where Fluff, Larry and the author found plenty of room to stow themselves without "sardining."



The engine room of the Philistina with a 16 h.p. Racine engine. Looking aft from the main cabin, the galley is to the left, the toilet to the right.

The lake is full of fish. We could see them jumping. The skipper hooked a monster but lost him through not having a net. Our volunteer guide told us tales of marvellous catches some of which we afterward corroborated. But again our hoodoo was with us. With the exception of a few small ones we were obliged to return empty handed.

Next morning I was awakened from my snug berth in the forward compartment to hear the rain pounding on the deck, but below everything was comfortable and warm. We took our morning plunge and found the water colder than usual. The skipper and I decided to stay aboard and overhaul the ship. The others were sent off fishing. Charlie amused himself by tying a hand line to the rail and pulling in an occasional rock cod. These he kept alive in an empty gasoline can—after the manner of the Japanese—changing the water at intervals. It was nearly dark before we had completed our self-appointed tasks. The fishing party returned with about 40 pretty trout, having seen a bear and three deer.

On the following morning it was still cloudy, but as the barometer showed a break, the skipper ordered sail made. We got so early a start that after traversing Sutil Channel and ducking under the lee of Breton Island, we arrived at Heriot Bay and found the launch Restless of the Seattle Yacht Club, her crew still asleep. Restless is one of the most consistent cruisers in these waters. She is about 47 feet over all and has a 20 h. p. San Francisco Standard. Her owner is Dr. Gordon, a retired physician who spends most of his time on his island in the San Juan group. As the skipper's father-in-law was one of the party on Restless, we stopped to make arrangements to meet farther on. Back of Restless was lying Macumba, another contestant of the long distance race, owned by C. G. Seymour-Bagot and designed in the East. We landed our guest on Macumba and started on our way as Restless is a much heavier powered and faster craft than Philistina. We had breakfast en route. It was Charlie who discovered that the water in our tanks was getting low so it was decided to make a stop on the way back at Lund. I believe that I have not explained that we had concluded at Village Bay not to extend our trip to Alaska, as we had originally thought of doing, both on account of the unsettled weather and the time necessary for the trip. The excessive price of gasoline on the Canadian side and our failure to ship enough at the start to last out both a fishing trip and the long run added to the difficulties. For American motor boats contemplating the run to the various Alaskan ports, the best plan is to ship a drum (which can be bought in Seattle at 15 cents a gallon) to Ketchikan by steamer. This decision to turn back was no reflection, however, upon the ability of a boat like Philistina to make the trip, as it had frequently been accomplished by Racine stock models of even smaller measurements.

We arrived in Lund about 10 o'clock and received the priv-

ileges of dockage and water without compensation. On this stop we took time to see a little more of the town by daylight and visited the shop of a boatbuilder by the name of Osborne, the complete equipment of which, so far from the centres of the motor boat craze, had aroused our surprise before. Suddenly one of our party descried a boat coming through Baker Passage, so we hurried back, rightly surmising it to be Restless. By the time that Philistina had poked her nose out of the harbor Restless was directly abeam and two miles off shore. Apparently they failed to see us though I wigwagged a hail, for they held straight to their course. We watched them until they dwindled to a tiny speck on the horizon and finally disappeared altogether around the lee of an island. As the wind was favoring, the skipper ordered on the canvas, which we found just about equalized the heavy current we had to buck down the east coast of Texada Island. At seven o'clock we again found ourselves at Buccaneer Bay. That night we played our first game of "stud" by the aid of the extension lights, first having enclosed the cockpit in its canvas covering.

The next day we spent at Buccaneer Bay bracing up for our return to civilization. Changing over the spark coil occupied the skipper and myself for some time, as this was the first time either of us had been called upon to do it ourselves. It was the first occasion we had had to touch the engine during the entire trip of something like 700 miles—counting the preliminary run to Vancouver. I should be ashamed to say just how long it took us to shift that coil, but when we got through we knew much more about wiring than when we started. The rest of the day was spent just loafing. Hoo-hoo, a sturdy glass-cabin launch from Vancouver, lay alongside of us. Her crew consisted of two young married couples. We visited back and forth, rowed round in the dinghy, fished, landed on the beach, played in the sand and went swimming.

In spite of the fact that all of the ship's clocks had run down, we got a splendidly early start next morning and rounding the end of the little Thormanby, squared away in the mist for the entrance to Nanaimo on the other side of the Gulf of Georgia. Like the Straits of Juan de Fuca, fifteen minutes sometimes suffices to kick up in the gulf as nasty a sea as you want to meet, so everything was lashed in readiness, especially as the breeze was freshening from the northeast. Owing to the skipper's foresight, however, we covered the thirty miles in good time, meeting the steamer City of Nanaimo just starting on her daily run to Vancouver. Winding through the northerly channel, back of Newcastle Island, we came into the harbor and tied up back of the city docks in a little arm of the bay where a number of motor boats were lying.

After a late breakfast, Larry, Fluff and I went ashore. We had not taken the precaution to change our working togs for shoregoing clothes. People stared at us as we passed as if we were pirates or a circus parade. A clerk in a grocery store tok one look at Larry's face. Even for his English sense of humor the strain was too great and he exploded into an unmistakable chuckle.

"What's the matter with you?" asked Larry, a trifle indignantly.

"Oh, I say sir—really you know, sir—ahem—tee-hee, tee-hee. Well if you will pardon me, sir," he managed to splutter, "your beard is very 'umorous-looking, sir—really quite grotesque—if I may say so, sir."

"Well, why in hell didn't you say so in the first place?" commented Larry without rancor, "instead of standing there wringing your hands and letting it out in chunks."

"Oh, very good, very good, sir," guffawed the clerk, thinking this a specimen of American humor. I dragged Larry away from international complications. The whaling station was not open, but we caught a glimpse of the old block house and other points of interest in the quaint little fishing city, before we returned to the boat. It was nearly noon before we got under way, passing some of the forerunners of the herring fleet which assembles here by the hundreds during the run. Just at the entrance of Dodds Narrows the tug Sea Lion with its tow of logs waited a chance to slip through. A minute later Philistina was in the passage way between the two islands, barely wide enough for even two fair sized motor boats to pass. The sun shining down the perspective of the two converging shore lines lit up the scene like the overhead lighting of a well hung picture in an exhibition. Some Indians were tacking back and forth across the channel, barely holding their own against the current. On the chart, a little indentation that marked Evering Bay appealed to us as a lunching spot. On arriving there, we found the shore pre-empted by a Sunday-school picnic so we dropped anchor outside.

From Evering Bay we took a litle turn up the arm which leads to the city of Ladysmith on Vancouver Island—a famous coaling centre, but as no one wanted to go on shore to visit the mines we decided to make Cowitchan that night.

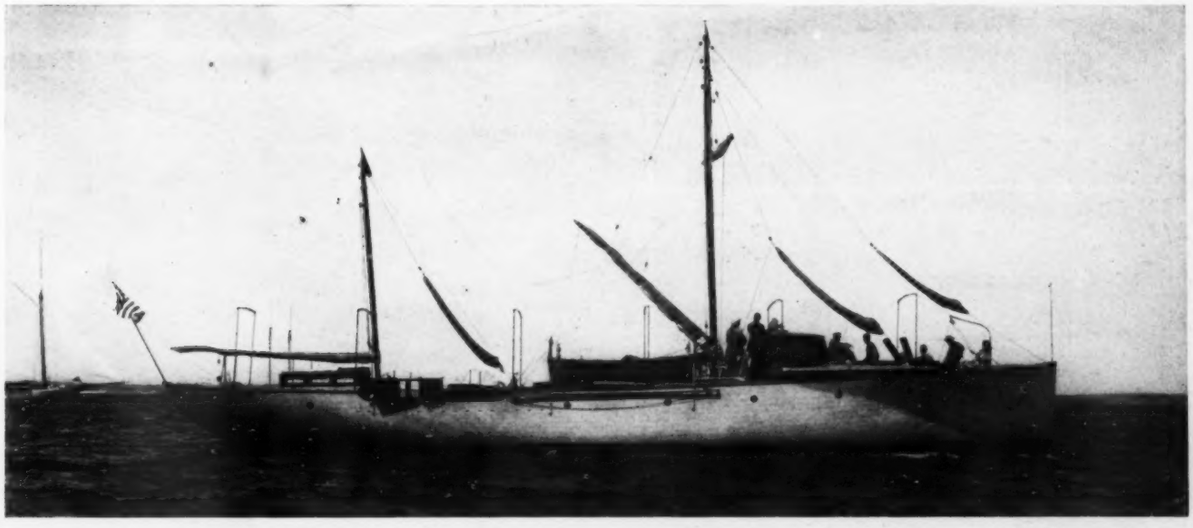
Having been placed in command of the vessel, I stationed Fluff at the helm with a few general instructions on steering a course by the chart. About an hour later, happening to glance up, I saw to my horror that we were almost on a reef extending out from a rocky island. The end of the reef was marked with a black spar buoy. Looking on the map I found it clearly indicated.

"Fluff," I said sternly, pointing with an accusing finger to where the buoy was marked on the map, "how could you pass inside of that when I particularly warned you to leave all buoys on the shore side."

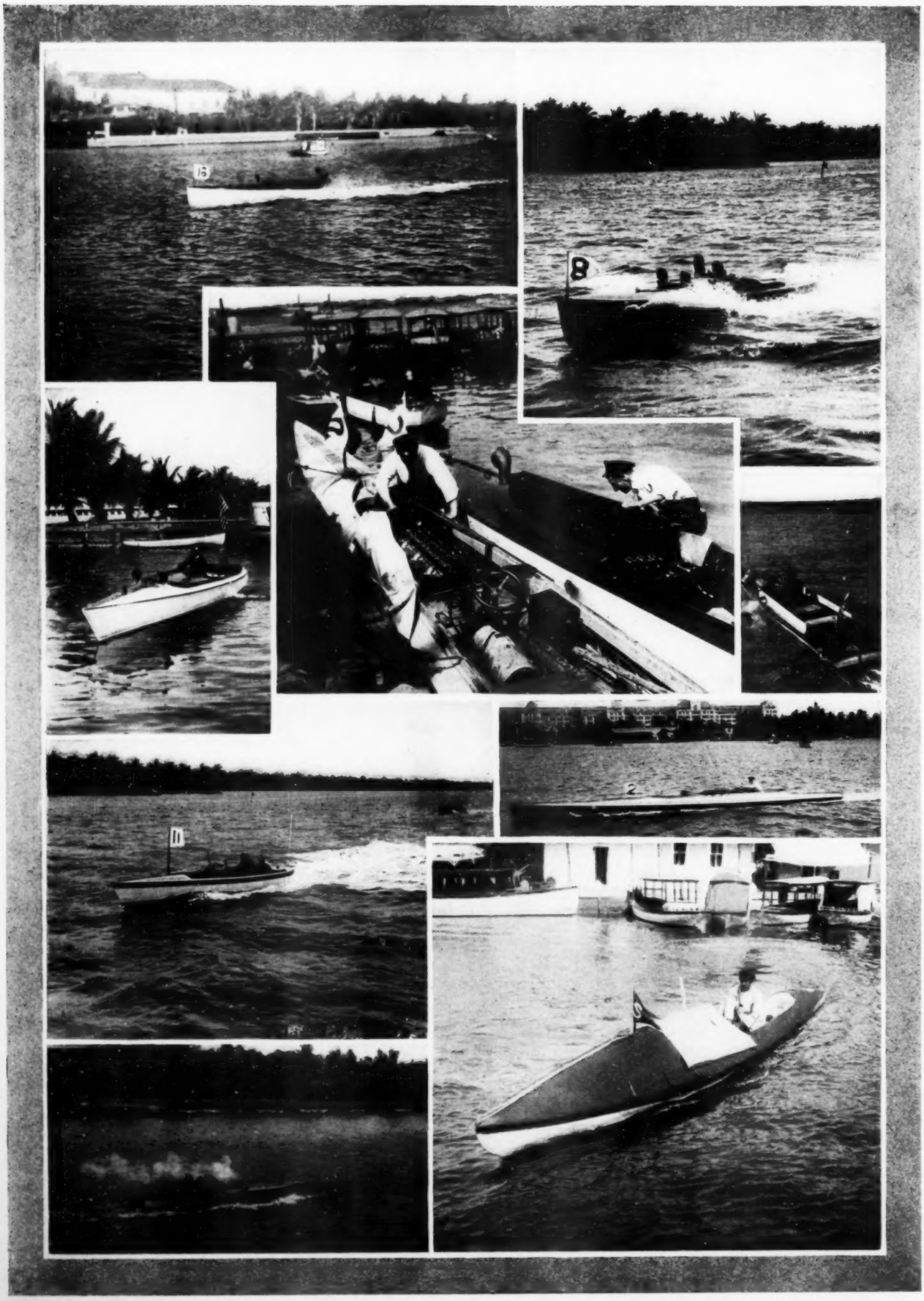
Fluff scratched his head and gazed hypnotically at my finger. "Is that a buoy?" he asked naively. "Do you know, I thought it was a fly speck?" After that I had to take the helm.

As we approached the entrance to Sansum Narrows, the wind drew down off the mountains to the water's edge. It was odd that under the very lee of the highest cliff no shelter could be found. The course through Sansum Narrows is very confusing if one has never piloted a boat through before. It winds in and out of the mountains in the most desultory manner, luring the inexperienced navigator into blind pockets or sending him on a merry chase around obscure headlands. It was nearly six o'clock before we had unraveled our way, and I must confess to one slight deviation from the path, which

(*Continued on page 62.*)



Sepoy, a 75-footer owned by Willoughby H. Stuart, Jr., of Swampscott, Mass. She was designed by W. Starling Burgess and has two 4-cylinder Joyce engines.



The races at Palm Beach have become a prominent fixture in the motor boating year and they always bring out a large number of craft of characteristic construction. Rivalry is keen between local designers and builders and those of the North.

How Big Can a Motor Boat Be?

Is There a Fixed Limit of Practical Length for Craft that are Motor Propelled? The Views of Our Naval Architects on the Subject.

The Motor the Limiting Factor.

Cox and Stephens.

JUDGING from the results obtained by engines already installed in vessels, we are not inclined to recommend the installation of any single unit of over 300 h.p. and are much in favor of units not greater than 150 h.p. A consideration of this phase of the situation would seem to limit the practical size of vessels equipped with gasoline engines to "over all" lengths of not more than 125 feet. Where the total power installed in a gasoline vessel is very large, the increased cost per h.p. mile, of gasoline over coal more than offsets the saving in pay-roll caused by a smaller crew and the saving in fuel when the boat is not running, which latter is one of the main arguments in favor of the gasoline engine as regards economy in comparison with the steam engine.

Judging from the prevailing opinion of yachtsmen, we personally think it unwise at the present time to build gasoline vessels of greater dimensions than could be used in the Erie and Champlain Canals, or in other words, we consider that a length over all of 98 feet, beam of 16 feet and draft of 5 feet, are dimensions within which it is advisable to build, in order to make the boat a more salable proposition, in case for any reason her owner should desire to make a change.

Over 100 Feet "Undesirable."

Clinton H. Crane.

WITH the large size engines which it is possible to purchase at the present time, and employing a triple screw arrangement, which is also perfectly practicable, we could build a yacht of 1,000 tons, which would be a vessel over 240 feet long, driven by three 500 h.p. engines, obtaining a speed of 14 knots. This would be a cruising boat which would be entirely practicable, although the carrying of the large amount of gasoline, something like 24,000 gallons, and the obtaining of such a quantity would present difficulties which, although not impracticable, would make such an installation undesirable.

The use to which the boat will be put has of course a most important bearing on the question of size. The gasoline engine is particularly suited to a boat whose use is intermittent, that is, a boat which does not make long and regular trips, as, with the gasoline engine, fuel is only used when the engine is actually in motion, whereas with steam, coal is being burned some time before and after the engine actually moves. This is particularly true if the boat has to be kept ready to go without notice.

It must also be borne in mind that a gasoline engine is always more noisy than a steam engine, consequently, as soon as a boat is large enough to require the services of a high-class engineer, steam will prove more attractive in spite of the extra speed and larger accommodations brought about by the use of gasoline.

All things considered, I should put the dividing line somewhere between 80 feet and 100 feet; that is, I consider a gasoline boat over 100 feet long as distinctly undesirable, and a steam boat under 80 feet long as distinctly undesirable.

Can Be 250 Feet Long.

Morris M. Whitaker.

THE limit of size of the gasoline boat today is measured by three times the largest unit of power which can be obtained in the market. That is, you can now get 500 h.p. motors and the limit of the size of the boat would therefore be one requiring 1500 h.p. to drive her at the designed speed. If a high speed is required, the power necessary to achieve the speed being fixed at 1500 h.p., the size of the boat would naturally be smaller than if lower speed were required. On a boat designed for a speed of from 10 to 12 miles per hour 1500 h.p. will drive a pretty good-sized hull. There are other considerations which would enter into the limiting size, such as accommodations for owner and guests, fuel capacity, etc., but I do not see any reason why gasoline should not be applicable for boats up to 250 feet long, and due to the small space occupied by the motor installation, this should be equivalent to a steam outfit at least 25 feet longer.

The triple screw proposition is especially applicable where gasoline is used as it gives three speeds with economy, that is with the center propeller in use and the wing propellers idle; with the wing propellers in use and the center propeller idle, and all three in operation. In this way the different units can be operated at maximum efficiency. Of course the cost of fuel is higher with gasoline than with coal, but the boat only consumes fuel when in motion, whereas with steam it is necessary to keep the fires under the boilers lighted so as to be able to get in motion when desired. Taking this fact into consideration, I believe that the fuel bill would be practically the same with the balance in favor of the gasoline, when one considers that the majority of runs of the boat are made below the maximum speed. The cost of attendance also with gasoline is much smaller than with steam, and the first cost is a little lower.

Fuel Expense Keeps Length Down.

R. M. Haddock.

WE do not see many boats much exceeding 100 feet owing to the fuel expense of engines powerful enough to drive them at desired speeds. This is one of the main limiting factors to my mind. With the advent of producer gas plants there is no reason that boats should not be built to two or three times the size of the present ones, in fact limited only by the demands of commerce and local conditions. For pleasure boats the canal locks would, I think, in a great measure, influence an owner, as it is a great advantage to be able to pass through the canals to the lakes, and also makes a more salable boat.

The Coming Palm Beach Races.

THE sixth annual race meet of The Palm Beach Power Association will be held this season on March 15 to 18 inclusive. Already there is considerable interest in the event and it promises to be the largest ever held on Lake Worth.

The past races for the various trophies offered by the Association, have attracted many of the fastest boats of the country, including the famous Dixie, owned by Commodore Edward J. Schroeder, of Jersey City; the Courier, owned by Wm. J. Conners, of Buffalo; the General from Michigan, etc.

Among the local designers of the Florida East Coast are a number who have turned out successful boats and the rivalry between these local productions and those from the North will be even greater than usual this year, stimulated as it will be by the fact that the prizes include a purse of $2500 in gold besides a number of valuable cups.

For the Sixth Annual Regatta of the Palm Beach Power Boat Association, the Regatta Committee announces the following:

CLASSIFICATION.

Class A—All boats, A.P.B.A. rating rule.
Class B—32 feet and under, L. W. L.
Class C—32 feet and over, L. W. L.
Class BC—All boats, L. W. L.
Class D—17 miles speed and under.
Class E—17 miles speed and over.
Class DE—All boats, speed.

NOTES.

1st. Handicaps or time allowance will be figured for Class A in accordance with ratings obtained under the A.P.B.A. measurement rule and for Classes B, C and BC; D, E and DE; the Endurance Run and Consolation Race in accordance with the actual speed ability system used by Mr. Theodore D. Wells in the five previous annual regattas.

2nd. Motor boats not equipped with mechanical means for going astern, will not be allowed to contest in the different events of the regattas.

3rd. Motor boats under 12 miles speed ability, will not be allowed to race.

4th. Motor boats eligible for the Speed Contest for Florida boats must be designed and constructed in Florida, and certificate so stating must be filed with the Regatta Committe by March 14.

5th. Motor Boats entered for the Endurance Run, Palm Beach Grand Prize, will not be allowed to start unless they arrive at the Royal Poinciana Basin on or before March 6, 1910, enter and complete 70 per cent. of the general races they may be eligible for (all boats must start and complete Class A Race and the Speed-Economy Race), be excused from the remainder for cause, and show a minimum speed on the course of 20 miles.

6th. The trophies for the Speed Record (average of six trials over the mile course) and the Speed Contest for Florida Boats will not be awarded unless the record making boats enter and complete 70 per cent. of the general races of the Regatta for which they may be eligible (all boats must enter and complete the Class A Race and the Speed Economy Test), be excused from the remainder for cause, and obtain higher speed than in the general racing.

7th. All boats must enter and complete Class A Race under penalty of disbarment from remaining races. No boats will be allowed to qualify for this race that have not been measured at Palm Beach. No measurement charge.

8th. Racing rules of the American Power Boat Association, except where otherwise noted are to govern all contests.

9th. Length of races and speed requirements are in nautical miles.

Requirements of a Southern Cruiser.

How the Design of a Motor Boat for Use in the South is Influenced by Southern Conditions. A Discussion of Dimensions, Arrangement and Ventilation.

By Daniel H. Cox, N. A.

WITHIN the last five years the development of the gasoline engine has been such as to make it possible for designers to plan, and builders to produce motor boats of large size, good power and excellent accommodations that have proven absolutely reliable and satisfactory while in service. The earlier motor boats, being really experimental, were necessarily of comparatively small dimensions and low power, while such has been the progress in construction that at the present time the only practical reason that the conservative limit of length has been placed at about 100 feet is that the average owner has in mind the possibilities of wishing to use his craft in the various inland waterways and canals, otherwise there would be built or building many motor boats of 125 feet in length or even of greater size.

One of the first uses for these cruising motor boats was for Southern waters, and it is the exception now to find anyone building a boat of this description who does not bear in mind the requirements imposed upon him if he wishes to cruise in the South with comfort. There are many points that must be considered as they all bear on the problem, and in building a new boat it is a wise step to benefit by the experience of those who have been over the ground and thus avoid serious blunders.

Firstly; as regards the dimensions of the boat. If the owner has in mind cruising in the Indian River, his draft should not exceed 30 inches, as otherwise he will have trouble unless the water is unusually high. This very shallow draft when applied to a large boat naturally means a practically flat bottomed proposition and is therefore, as a rule, disregarded by the average owner. If one is content to give up exploring the Indian River except in a motor tender which is always carried on board, a draft of 4 feet 6 inches is perfectly practicable, and this is the figure that is usually determined upon for good sized cruising motor boats. As in many of the inland passages the turns of the channel are very abrupt, the boat should not be of unnecessary length, and it seems that about 100 feet produces a good comfortable boat that will not be too unwieldy to negotiate successfully the narrow channels. As stated above, canal conditions should be considered also, and as the practical limit of length in the Erie and Champlain canals is 98 feet, this length is generally allowed to govern the dimensions of boats intended for the South so that they may be taken to the St. Lawrence River as well. The beam should be as great as consistent with the size of the boat and a 98 foot boat should be in the neighborhood of 16 foot beam, which dimension will not conflict with the size of the locks in the canals leading to the St. Lawrence. Considerably larger dimensions can be carried through the canals on the way South, but for the reasons given above, it is not wise to go beyond these limits.

Having determined the approximate maximum dimensions of the craft for this purpose, the power to be employed is the next consideration. For several reasons a twin screw boat is practically a necessity. In the first place if any considerable power is to be installed it would be impossible to keep within the draft limitations on account of the size of the propeller that would be required for a single engine. In the second place, the twin screw boat is naturally much more handy and can be used in the tortuous channels with much less difficulty. Finally, the twin screw proposition has of course a much greater element of safety than the single screw. As the general character of the boat we are discussing is that of a bulky, roomy craft, her form does not adapt itself to high speed and accordingly large power cannot be utilized to advantage. For a 98 foot by 16 foot motor boat it does not appear wise to install more than a total of 150 or at the outside 250 horsepower. This power will, under ordinary conditions, give the speed of 12 to 14 miles an hour, which is ample for most purposes.

The next point to be considered is the general type of boat. It is generally agreed that for vessels of this description the enlarged launch form of hull, with canoe bow and stern, seems the most sensible arrangement. With this type, a considerable amount of absolutely unnecessary gear and rigging that is required for vessels with the conventional clipper bow, overhung stern and all the appointments of a steam yacht of small size, are done away with. This results in a better sea boat and one that can be run at less expense and with a smaller crew; also a boat that can be brought into a dock without danger. By some it is considered advisable to have two masts on which sails can be set in an emergency, but this adds to the complexity of the rigging and with the reliable engines now made, does not seem necessary. In the larger boats it is possible and decidedly advantageous to have a good roomy deckhouse, containing a dining room and pantry, and this, associated with a dummy stack, which is used for ventilating the engine room and which carries the mufflers, gives the boat a certain dignity of appearance and adds greatly to her comfort, while not detracting from her seaworthy qualities.

As to the arrangement of quarters, there are as many different opinions on one point as there are people going South, namely, whether the owner should be aft and the crew forward, or vice versa. As a matter of fact there is a great deal to be said in either direction and the boat will be a success and comfortable if the following main points are observed.

Firstly: The engines and gasoline tanks should by all means be reasonably near the center of the boat, and for the sake of safety separated from the quarters by steel bulkheads, and over the engines should be the stack, to which reference has been made. Above all the galley stove should not be in, or in communication with, the engine room. Placing these heavy weights as suggested produces a much better sea boat, and reduces the change in trim between load and light conditions.

Secondly: The quarters for the owner and his guests, whether they be at the forward or aft end of the vessel, should be unusually large and well ventilated. A boat cut up into a number of small state-rooms cannot be comfortable in warm weather, and liberal dimensions, therefore, should be given to each room, and the headroom should be at least 6 feet 4 inches. Each state-room should have several air ports for light and ventilation and in addition, either a large skylight directly overhead or else—if the boat is of the trunk-cabin type—should have several windows in the trunk that can be opened from the room. The rooms should be furnished in a simple manner without any unnecessary hangings or curtains; carpets and other upholstery should be light and airy and of a type not calculated to be affected by dampness and become musty. The doors to all lockers and closets should have grill work for ventilation.

As regards outfit and equipment, this should include a good reliable motor launch and one if not two boats particularly adapted for fishing. Ample locker space should be provided in the boat for storing in a satisfactory manner all the necessary outfit, guns, rifles, fishing rods, etc., that are sure to be required. As it has been difficult in many places to secure ice and also gasoline, as well as ordinary stores, the storeroom facility should be unusually ample. It goes without saying that all windows, doors, air ports and skylights must be screened with brass wire so as to prevent the annoyance of flies and mosquitoes that are very troublesome throughout the South.

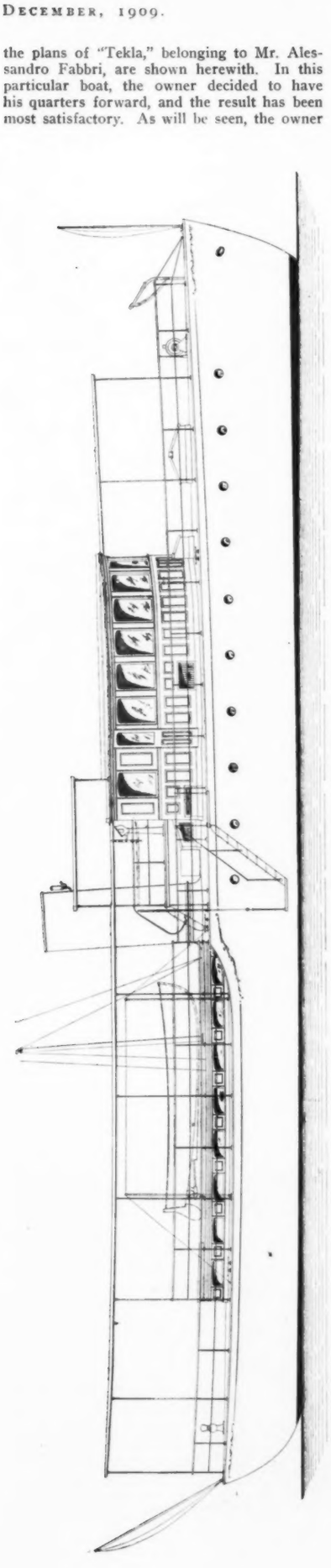
From a practical point of view, the greatest inconvenience that the owner is apt to have from the use of the boat in the South will be caused by damage occasioned by running aground or by running in shallow and therefore sandy water. It has been found that the stern bearings and the propeller shafts are so affected by the sand in the water that they have frequently to be renewed. Propeller wheels also are often damaged by striking submerged logs or snags on the bottom. To cover these points it is a good plan to carry along or have made ready for shipment spare propellers and tail shafts. One plan that has been tried with some success is to keep the sand out of the bearings by the use of bronze tubes encasing the shafts and having a stuffing box at the inner and outer ends. To minimize the damage to the hull by grounding on oyster beds, rocks, etc., it is wise to fit a false shoe on the keel to protect it, and also to work two heavy timbers outside at the turn of the bilge to protect the planking when the boat goes aground. Probably the most dangerous condition to overcome is the teredo worm, which abounds in the South, and which, if once allowed to get into the plank and keel, will soon ruin the boat. This pest can be kept out of the boat if she is hauled out and painted frequently but otherwise it is absolutely necessary to copper sheathe the hull from about 12 inches above the waterline down to the keel.

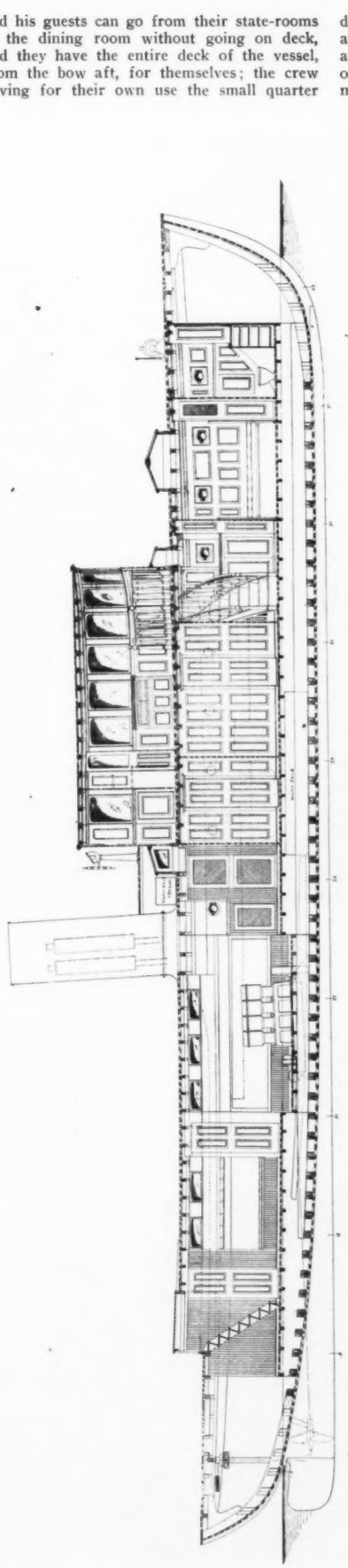
One point which is also very necessary for the comfort of the owner and is often neglected is the heating of the quarters. Even in the South, and certainly on the way down and back, there will be times when some sort of heat will be absolutely necessary. If the boat has a sufficiently powerful electric lighting plant it is perfectly feasible to have in each state-room and in the dining room an electric heater that will at least take the chill off the room, and except in severely cold weather, will be all that is required. Such a method of heating, however, is somewhat extravagant, and possibly the best solution is a hot water heating plant with radiators throughout the boat. A plant of this description can be installed at but slight expense and can be run on but little coal while the amount of heat required can readily be regulated.

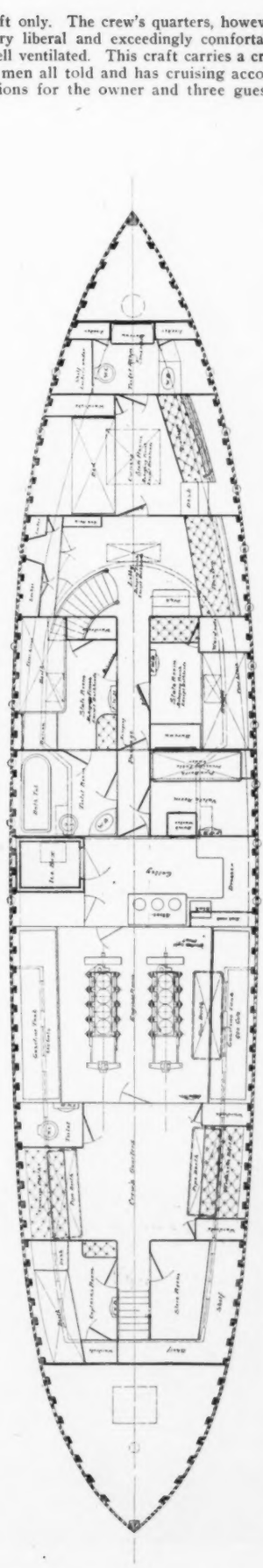
While in the above general description reference has been had only to boats of considerable size, the same general requirements apply to any boat to be used in the South. Small boats cannot of course be so comfortable; and the first cost and the cost of maintenance of even a 98-foot boat is by no means large compared with that of a steam yacht or sailing vessel having equal accommodations, so that the majority of vessels built expressly for the South have been up to the present, and undoubtedly will in the future, be of good size.

In order to get some idea of the available amount of space in a modern cruising motor boat, approaching the dimensions suggested,

the plans of "Tekla," belonging to Mr. Alessandro Fabbri, are shown herewith. In this particular boat, the owner decided to have his quarters forward, and the result has been most satisfactory. As will be seen, the owner and his guests can go from their state-rooms to the dining room without going on deck, and they have the entire deck of the vessel, from the bow aft, for themselves; the crew having for their own use the small quarter deck aft only. The crew's quarters, however, are very liberal and exceedingly comfortable and well ventilated. This craft carries a crew of six men all told and has cruising accommodations for the owner and three guests.







Tekla—the 90-foot cruiser designed for use in the South and referred to by Mr. Cox.

Talks With Our Naval Architects.

Morris M. Whitaker.

MR. MORRIS M. WHITAKER, of New York City, is the son of Ezra J. Whitaker, Chief Engineer U. S. N., and has been associated with boats all his life. After graduating at Yale he took a course in naval architecture at Cornell and later a course in engineering at University College, London. He began his technical work in the office of C. D. Mosher; was for a while with the Newport News Ship Building Co., and then spent a year in visiting the foreign boat building yards.

For several years Mr. Whitaker had been engaged in editorial and engineering work, until this spring, when he opened an office in New York City. Among the boats designed by him during the year are "Caroline" and "Mariada," 65 and 60-footers, respectively, and the ill-fated "Kitcinque," a 40-footer that was burned in the Marblehead Race this year.

In speaking recently to a representative of MOTOR BOATING, Mr. Whitaker said:

"There is a constantly growing demand for more speed in all classes of motor boats. Where a few years ago the average owner of a cruiser was satisfied with from 8 to 10 miles per hour, the same owner when ordering a new boat now requires 11 or 12. The development of the modern gasoline motor has made it possible to realize this speed even with small cruisers, and in the larger sizes to get a much higher proportionate speed. The greatest demand is for boats of the cruising type, and it is a higher class demand, due to the buyers becoming better posted as to what can reasonably be expected with a boat of given size. There is also a limited demand for high speed runabouts, but even in this class better accommodations are being required.

Morris M. Whitaker.

The development of the cruiser shows a general lightening of all materials over what was considered necessary a few years ago, and improved methods of construction have made it possible to maintain the standard of strength. The first motor boats built were, of course, developments of the steamboat, which, on account of the great weight of the power plant, required heavy scantling, heavy displacement and deep draft. When gasoline engines were first substituted, ballast was used to bring the boats to their designed line, but modern boats show that ballast is unnecessary and just as good a sea boat can be put out on a much lighter displacement, so that within a few years it will probably be considered as ridiculous to use ballast in the motor boat as it would be uneconomical to use it in a commercial vessel.

The tendency abroad is toward what is called the longtitudinal system of framing, which depends for the main strength of the hull on fore and aft stringers, with only sufficient transverse frames to keep the boat in shape, and permits general lightening of the scantlings throughout and makes a more resilient structure. This form of construction undoubtedly will be developed here, as it is already coming into some favor. Due to the greater cost of double planking the carvel system will probably remain the standard except in cases where extreme lightness is required. Steel for use in motor boat construction is not likely to achieve much popularity except in boats over one hundred feet in length. Under this size a structure of equal strength can be made lighter of wood than of steel, due to the necessity of keeping the thickness of the steel plating

(*Continued on page* 66.)

Kitcinque, the 40-foot Marblehead racer designed by Mr. Whitaker.

Hints On Motor Boat Navigation.

Part VII—Running in Fog.

By George S. Goldie.

FOG is a thing respected by all, and dreaded by many. The great ocean liner will work its way into New York Harbor against the most furious blasts. Wind which causes tin roofs to rival aeroplanes can not stop it; but, let the microscopic globules of moisture gather until the air is opaque with their whiteness and the mighty engines of 40,000 horsepower become stilled while the great hull which they should drive lies almost helpless in the deep water beyond the channel entrances. Farther up at the great city there is almost complete paralysis of the harbor traffic, all because of the limiting effect of the tiny particles of vapor on man's vision and hearing. The motor boat alone is the free lance which, because of its quickness of action, can roam at will through the mysterious fall provided, of course, that our friend at the wheel understands the compass and knows the waters he is to traverse. It is then that he rises to the dignity of the real skipper.

With a clear sun and bright laughing waters most women are fairly well able to take the wheel; rough, angry seas try many men; night thins out the number of those who are willing to "take charge"; and fog leaves but very few who will assume the responsibility. But this should not be so. This fear of fog should not prevail among motor boatmen. Try out your compass, reader, to see that it is right; then sight over it from the club float or from your moorings, at this, that and the other distant point, not too far away at first, and having noted their distances, or better yet, the time it takes you to run to them in clear weather, start for them at the earliest opportunity during fog. Having arrived at the selected point, turn the boat about, reverse your compass course and run it back. Run it again and again; it will soon become monotonously simple. Now try each of the other points noted. Having gained confidence you are ready for longer trips; for courses with corners to turn and others with obstructions. Soon you will find yourself starting off in the fog just to see if you cannot do some particular "stunt" in good seamanlike manner. You will always learn something no matter how often you go, even when you become a veteran. The mystery in fog running will remain, and therein lies the charm. It is like exploring the long-closed room.

There are several kinds of fog. All fog is vapor but all vapor is not fog. The thickness of the Northeaster may or may not carry fog with it, more often it does not. That style of thickness is intermittent, being worst during squalls. Fog from off the land will seldom last late in the morning. If the sun does not burn it up quickly it will clear as soon as the breeze from the water starts shoreward. Some fogs are in clouds, some in banks with quite decided lanes between them. Such fogs are a comfortable sort, as the thin spaces between the clouds give frequent glimpses of the surroundings. Other fogs will suddenly rise from all about you; they are not very persistent and are likely to dissipate at any time. The fog which causes trouble is the one to be seen lying like a dirty yellow bank low down on the horizon at sea. When it rolls in, which it does with wonderful rapidity with no apparent breeze to carry it, there are no lanes. Some parts are thick and other parts thicker. These are the fogs which divert sound, and cause echoes off hills and sails and steamers' hulls, which at other times would send none back.

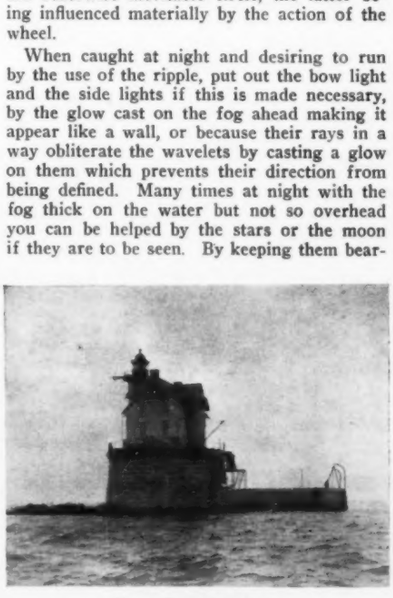
A test employed in dense fogs is to blow a horn and listen. If there are hills or sails near an echo is likely to be heard and the time it takes the echo to reach you will give a fair idea of the distance of the object, remembering that the sound must travel from your horn to the object it echoes from and back again to you.

Many boats, perhaps eighty per cent of them, do not carry compasses. Why this is so is not easy to understand. On a large bay, the shores of which are dotted with boat clubs having memberships ranging from one hundred to ten hundred, I stepped aboard a four thousand dollar launch, to take her on a run. Making inquiry for the compass, I was asked if it would not be possible to borrow one for the particular trip we had in hand, the owner saying that at other times he had no use for one, that he did not know any owner who had one as the boats thereabout were not equipped with them. He admitted that they were sadly handicapped by fog at times. Every boat should carry a compass of some kind, and if used much in heavy water it should be a spirit compass, the dry variety being too easily oscillated by the movement of the boat over the waves.

On rivers and lakes, boats not using compasses will find their way by a proper use of the wind, or of the current. If using the wind, one should take note of its direction the moment the fog is seen. At that time you will be able to tell when headed in the direction you wish to go and which part of your boat the wind should strike, the waves will run from the same direction. Steer so they will continue coming from the same quarter. You now have a good guide provided the wind does not shift.

Another method, the depth of water permitting, is simply to keep the shore in view. If the depth of water does not permit this and there is not breeze enough to ripple the surface, as soon as the fog is seen, head in the direction you wish to go, then tie a long line to the forward staff and letting it trail a long way astern so steer that the line will remain directly over the center of the stern. To have it do this nicely you must see that it has been tied high enough on the bow staff to enable it to swing clear without touching the stern. By this method you will be able to run from point to point in straight lines instead of in the otherwise inevitable circle, the latter being influenced materially by the action of the wheel.

When caught at night and desiring to run by the use of the ripple, put out the bow light and the side lights if this is made necessary, by the glow cast on the fog ahead making it appear like a wall, or because their rays in a way obliterate the wavelets by casting a glow on them which prevents their direction from being defined. Many times at night with the fog thick on the water but not so overhead you can be helped by the stars or the moon if they are to be seen. By keeping them bearing the same, a fairly straight course can be steered.



Race Rock Light.

The current of the river is a good guide, but how are you to know from whence it comes? A party of government engineers while working on the lower Mississippi, where it had a breadth of three or four miles, found themselves shut in by fog at nightfall when about two miles from their steamer. They were in a large rowboat and wandered about for hours always arriving at the western bank. About midnight they arrived "filled with weariness, vexation and hunger," at the vessel. All this could have been avoided by using the "ground line," consisting of a line with a weight attached, which is let down to the bottom. In using it a good length should be payed out and the drift of the boat will then quickly show where the current comes from. If one is prepared with a line trailing from the forward staff, or held by a person stationed in the bow, he may start the boat in the direction required. These methods hold good on any waters, whether inside or outside. In tidal water, the use of the current is rendered more complex because of the necessity of knowing whether the tide is flood or ebb and of knowing the direction of the current in the locality; the current in some places flowing along the shore and in others away from or toward it. In traversing a current obliquely, always allow for it.

Important harbors and coasts are generally provided with structures bearing bells to be rung by hand or by machinery, electric gongs, horns blown by compressed air or steam. The water supports buoys which in many cases are surmounted by bells or by whistles, the former being so nicely adjusted by having four tongues suspended about the outside that the slightest motion of the water rings them. The whistles are powerful affairs with their tubes sometimes running down thirty feet into the water. As the buoy lifts on a wave the air rushes into the tube, and as it descends the air is diverted by a valve and forced out through the whistle, the moan of which can be heard, at times, a distance of seven nautical miles in clear weather. In contrast with this, I have, in a storm, passed within two hundred feet to windward of one of these whistles and heard it but twice.

In addition to all these fog signals the submarine bell is coming into general use, being attached to the bottoms of light vessels and buoys. The submarine bell provides the surest known method of conveying sound, nothing seeming to interrupt it. It can be heard a distance of fifteen miles, but to hear it one must be provided with a telephone instrument to place over the ears.

The uncertainty of the line of travel of the sound from instruments in the open air has been the subject of extensive investigation by our own and other governments. Many horns have zones in which they cannot be heard. Occasionally these zones are constant and at nearly all times are fairly so; for example, the Southeast Light horn on Block Island failed to penetrate through about two points of its western range; and the New London Light horn during certain fogs could not be heard south by west when within a mile or so of the light.

On many occasions it is difficult to find the direction of fog signals. An almost sure remedy for this is the use of the megaphone. Place its small end to the ear and swing in a circle. You will soon pick up the point at which the sound is loudest and thereby get its direction.

Many times the same signal will be heard from two directions, the first direction being the real one and the second an echo off a

hill, a vessel's hull, or a passing sail. The real signal may be stifled and obscure in its sound, and the echo boom out sharp and clear. At other times a signal may be heard clearly when several miles away and not at all when nearer or until one is close up with the machine producing it. All of which shows the motor boatman that it behooves him to become familiar with the peculiarities of fog.

When you hear the sound of a horn, it is important first to know what it is. If there is a three-second blast repeated at regular intervals other than one minute; or a three-second and a one-second blast or any other combination, you may be sure that it is a light-house or a light vessel. If a long blast and two short ones, it is from a tow, and if from a steamer it should be a six-second blast once a minute. Don't be too sure of the last for it may be given every five minutes or at any convenient time if the steamer is not provided with an automatic equipment. If from a sailing vessel, it should be one blast if she is on a starboard tack (her bow pointed to the left of the wind), two if on the port tack, and three if running free.

The next thing to know is where the sound comes from. Careful listening, or the megaphone will tell that. If sounding continually from the same bearing it is coming straight for you; change your course until it bears from another quarter. To change to a right angle from the direction of the sound is the quickest way out of the path of an oncoming boat, for, if she is dead ahead, you have but to travel half her width to be clear. If in spite of your efforts the horn seems to be getting too close to you and you fear a collision, give four or more rapid blasts on your own horn (the danger signal), the other vessel should do the same and both should come to a standstill, or reverse their motors, as the circumstances demand.

To illustrate a run in open water without a compass one will be given on Chart No. 114. The morning was fairly clear and we started for mackerel which we expected to find at Millstone Point, Long Island Sound. The run down the harbor and around into the sound was uneventful. At Millstone we took all the mackerel we wanted. Bluefishing was then suggested. A heavy fog had appeared and was then but a short distance to the south covering the water we wished to fish. Regardless of the absence of the compass we put the boat square away from the Point and ran for about three-quarters of an hour noting that we had left Twoface Island on our port hand. We then sighted some gulls, and spent an unknown time in going in various directions following their movements; at intervals we had sighted a nearby thickness which some declared to be Plum Island, and others merely a fog bank thicker than its fellows.

Tiring of the wanderings, the boat was headed supposedly for home. After some time there came the word from the bow, "rocks ahead!"

"Rocks ahead? Where?"

"Straight over the bow! Rocks to port! And to starboard! Shut off!"

These exclamations followed each other in quick succession. Fortunately the tide was at low ebb and there was almost no current.

"What is this? Who can place us?" asked the man at the wheel.

"We are between Little and Great Gull!" said one.

"That is just where we are," said another.

"You are all mistaken, the rocks there are sharp and show clear at low water. That rock ahead is broad and flat and shows only a few inches. Those on our side are just under the surface and similar. We are on the north side of the Sound and among the nest of rocks at the northern end of Bartletts Reef near Twoface Island (five miles to the north of the Gull reef). These rocks seldom show and it must be very low tide."

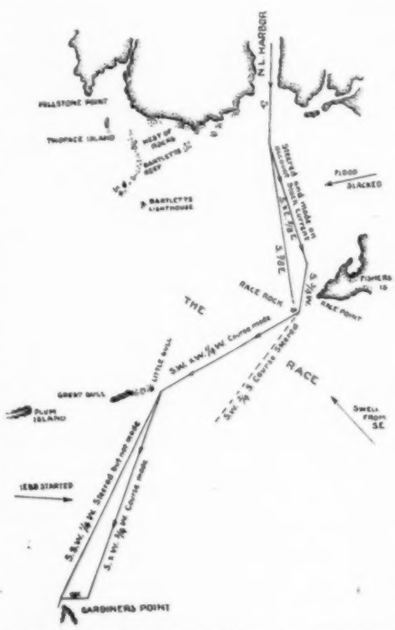
"Are you sure of that?"

"Yes, quite."

"Then take the boat!" and with that the skipper turned the wheel over to him.

When in a quandary, and with a man aboard who expresses himself as having faith in his convictions as to what is and should be, if he will back it up by taking charge, turn the boat over to him, for one man with confidence is worth a lot without.

The new skipper upon being asked what he proposed doing explained that the rock ahead was the most shoal, that astern the reef was deeper under the surface, and, calling attention to a ripple which extended into the fog astern, told them that that ripple indicated the reef, being, in fact, caused by the water flowing across it. He would work out of the nest, and putting the reef on his port hand would follow the ripple down at a safe distance. Off its lower end, a red buoy should be found. If it were not, he would admit himself wrong. When at the buoy the bell on Bartlett Reef light vessel should be heard. They would then make the light vessel and from there lay a course for the harbor. To run for the shore and follow it would lead into a worse situation regarding rocks than the one they were now working out of. The plan was followed successfully. To carry out such a plan requires much skill and local knowledge. Don't



Illustrating the instructions for compass steering in fog.

try it. Get a compass even if it is only a three dollar card affair. They work well in fairly smooth water.

We will go out of the harbor again, this time with a good compass. It is daybreak and raining heavily despite the fact that there is a thick fog. We set our course south and when we had run long enough to be clear of the harbor and into the westerly set of the flood current (all courses should be measured accurately and be run by time according to the speed of the boat) the course was altered to S x E ⅝ E that we might offset the drift of the tide on the run to Race Rock. When the time was within fifteen minutes of being run out we noticed that the ocean swell was coming to us on the starboard bow, showing that we had allowed too much for the current and were too far to the east. A continuation of the S x E ⅝ E course would have carried us to Race Point instead of Race Rock. The run of the ocean swell to the south of Fishers Island was from the southeast. A swell upon arriving at a headland, or a point will curve around it and try to follow the trend of the shore. Knowing we were yet some distance from our mark and that if running directly for it the swell should reach us on our port bow, the merest trifle off, we changed our course sharply to S ¾ W and soon had the three three-second blasts of the Race Rock horn ahead. As this horn points seaward across the Race there are times when it cannot be heard from the north until close by it.

Little Gull lies S W x W ¼ W 3½ miles from where we were, but as the tide in the Race was still running strong flood at nearly four miles an hour we steered two points more southerly as an allowance for drift. This run being nicely made we tried to figure the tide from Gardiners Bay and made it as being at the slack. That caused us to lay a course direct for Gardiners Point, figuring that we would be across before the ebb current gained strength. When the time was out the point was not in sight nor could its breakers be heard, but, being yet in the ocean swell and having it on our port beam we knew our location to be on the outside of the point and that we had been carried by the ebb. A sounding gave three fathoms, showing us to be fairly close in. The course was changed to W and the Point quickly made. We then rounded it to our destination.

The value of running on time from mark to mark is nicely illustrated in a run through Fishers Island Sound. In making trips in fog always take your departure from a definite point and note the time, also the time the next mark should be arrived at. Leaving New London light we steer S E x E ½ E 2 miles to Vixen Ledge H. S. spar; the tide being fore and aft on this run we should make the buoy if the steering has been good, but if missed we keep right on as it is not important. Having made allowance for the tide being with or against us, when the time is run out even though the buoy should not be sighted we alter the course and steer E S E ½ E 3½ miles for Rane Island light vessel, this course bringing us very close to the Horseshoe Reef. When the time for nearing the reef arrives we steer S E for two minutes and then resume the E S E ½ E course which we hold for two minutes, then run N E for two minutes, thus bringing the boat up to the original course for the light vessel, E S E ½ E, which is now steered, a sharp lookout being kept for Groton Long Point, which is also fairly close on the port hand.

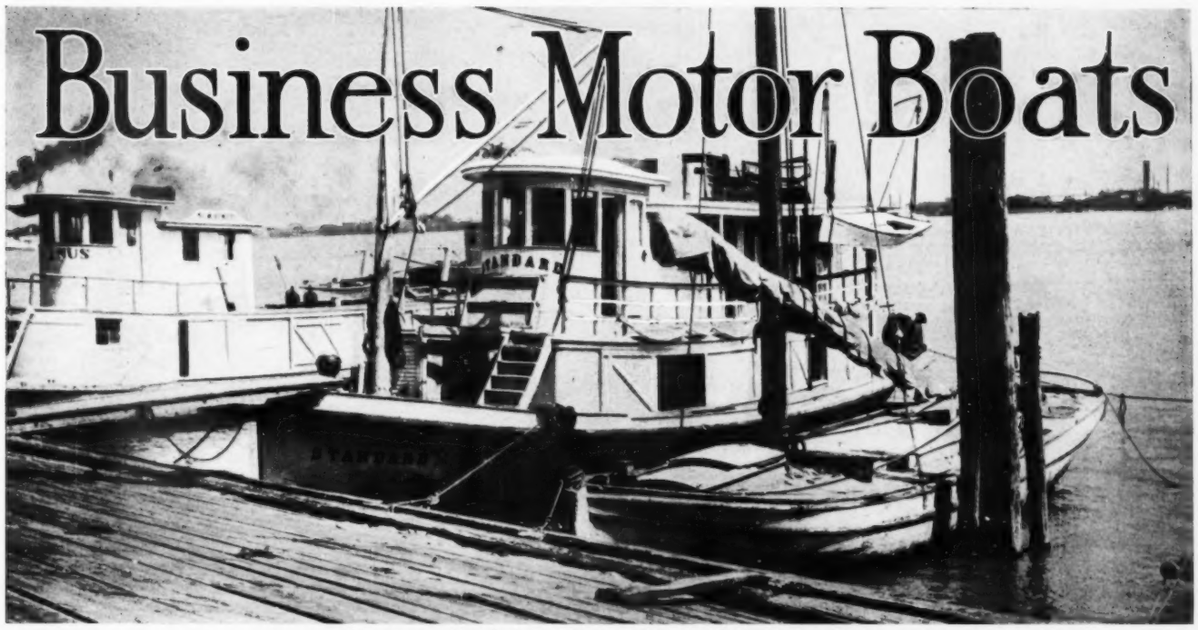
When the time is run out for reaching the light vessel if it is not made the boat should be stopped, that all, even the rush of water, may be quiet until the sound of the bell is heard. This is an important mark and if not made you are surely well off the track. Soundings should then be taken, the position located, the light vessel found and a fresh start made from it. The next course is E S E ⅞ E 5½ miles to Watch Hill entrance red spar No. 2. The first mark on this run is Latimer Light. When the time for reaching it (17⅛ miles) has been run out, though it will not be seen if the fog is thick, its bell should be heard, for from here to abreast Napatree buoy, nun No. 4, an oblique current is crossed and must be allowed for. The current is fore and aft the balance of the distance.

If the bearings are totally lost and a buoy is found, we will say a red spar No. 2 (there may be many red spars numbered 2 in the same body of water), we will take a sounding at it and after finding the depth under it look on the chart for a number 2 in the same depth, or better yet, look in the buoy book and it will give the exact depth at low water.

In this way one may know which buoy he is at and from it lay a new course. If in the open where there are no buoys, take several soundings at regular distances apart, say each half mile, having the lead landed; note the depth and the course steered; by finding approximately the same on the chart you should place your position and be able to lay a correct course.

Though the examples given are on chart No. 114 the principles used are good for all waters.

Business Motor Boats



A new gasoline freighter and one of the old lugger fleet.

How the Motor Boat Has Helped in the Development of Louisiana's Oyster Business. Some of the Motor Driven Freight Boats on the Lower Mississippi.

By Herbert L. Johnson.

DID you ever taste a real "Bayou Cook" oyster? If not, you still have something to live for. Come to Louisiana and get them fresh from the "briny," and you will agree with the experts that the bivalves which thrive on the low marsh coasts of the Pelican state are in a classs by themselves, with no second.

Such is the basis for an industry, which has grown most remarkably in the last few years, until it has become one of the state's foremost activities, employing in the handling of the big "crop" thousands of people and necessitating equipment which represents the investment of millions. And it is only another one of the great fields of operation, the rapid development of which in the past few years is due almost entirely to the gasoline engine.

For years and years, before Louisiana was a state, the oysters were as fine as they are today, but the methods employed in the handling were different. Oystering was then carried on almost entirely by Italians and Sicilians in their "luggers," shallow draft boats ranging from thirty to forty feet long, and rigged with one mast, carrying a huge lug sail. They are fast sailers, and carry a big load on very light draft. This is a necessity, as the canals, bayous and lagoons leading to the reefs are shallow and mostly narrow streams, where a deep vessel would be out of the question. The more "Americanized" oyster fishermen of the Mississippi coast employed schooners slightly larger for the same purpose.

The oysters were "fished" up from the reefs with long affairs resembling pincers, except that the business ends were spread out like rakes. With these apparently clumsy contrivances, it is surprising the pile of oysters an expert can bring on deck in one day.

With the advancing cupidity of man, and the introduction of steam, in smaller boats, the steam dredger invaded the field. Across the beds they would go, the close heavy rakes scraping the bottom bare of everything, and the whole catch large and small was consigned to the hold, en route to the tin cans and lands far away. Then the legislature stepped in, and the steam dredger was pronounced an outlaw. His work was nearly done, however, for the natural reefs had been scraped almost bare, and those who had clung to the theory that the beds were inexhaustible received a decided shock.

The patrol fleet consists now almost entirely of motor boats—good, healthy craft, nearly all converted yachts, well kept, and sufficiently powered, each mounting forward a business-like one-pounder, whose voice is sufficient to make any poacher sit up and take notice.

I can remember the day when the first gasoline invader entered the oyster fleet. The old "lugger landing," a landmark of New Orleans, was crowded with its fleet of typically green and yellow painted craft bobbing up and down in the swells of the yellow, muddy Mississippi River, when a strange craft rounded the bend, and headed for our side of the crescent. As she drew near her name identified her as one of the old timers; her mast and sail were still in their old places, but forward was a little chicken coop of a pilot house, and aft! Her square stem had been cut away, and a much longer fantail end added. On its deck was a low cabin trunk from inside of which came the undeniable noise which accompanied a big, slow-moving gasoline engine. She had on board fully fifty per cent more oysters than it was possible to carry and sail with, and had beaten the whole fleet up the river too far to talk about.

From that day the conversion began, and every summer found more and more luggers hauled up at the shipyards, having the masts and centerboard trunks removed and engines installed.

At first the owners of the old fleet were inclined to follow tradition entirely, and simply carry out the lugger hull with a fantail stern, and pilot house forward, but soon the advantages of the larger out-and-out power boat became apparent. The craft were built longer and narrower, the engine room placed as far aft as possible, leaving the fore and midship space for stowage. The deck hatches were replaced by a long, low deck house, giving head room and ample protection in any weather. The pilot house is usually mounted forward over the deck house. But the design of the original lugger is still distinctly noticeable in the latest of the fleet of today. The fine hollowed waterlines

One of the oyster patrol fleet. She is 55 feet over all, 11 feet beam and has a 32 h.p. Hercules engine.

The latest in the evolution of the gasoline freighter, 95 feet long and equipped with a 100 h.p. Wolverine.

forward, with the wide deck at the bow, show the origin of the type, while the sections midship and aft, excepting the fantail stern, are identical with the old sailboat form.

The propulsion is about evenly divided between the screw and paddle wheel, the latter being more in demand around the bayous along the coast, and the screw in the Mississippi River and its tributaries. In the stern wheel boats there seems to be a little more inclination towards the stationary engine, connected up to the wheel with sprockets and chain. With the open exhaust giving to the world the full benefit of the explosion in the big cylinder, and the rusty, squeaky driving chain adding its harmonious note, the "Dago" freight packet had the Venetian gondola completely eclipsed for "sounds which emanate forth." But they get there, and deliver the goods on time, so what else counts?

Probably the largest one and one of the most successful stern wheel gasoline freight boats ever built in this part of the country is Double Trouble, designed by her owner, Mr. R. R. Barrow, of New Orleans. She is 130 feet long, 23 feet beam and in model very similar to the typical Mississippi River steamer, long, flat-bottomed and straight sided. Named from the advice of the wiseacres, that gasoline engines would give nothing but trouble in a boat of such size, she has anything but lived up to her promised erratic career. Her chief feature is the installation of two big stationary engines connected to a stern wheel, which is made in two independent parts. This has been found invaluable in handling in the narrow canals and bayous, turns being made in one-fourth of the time it takes a steamboat to "hold her nose agin the bank" and swing her stern around. On more than one occasion a smashed wheel or engine accident did not delay the work of the boat, which would surely have happened with a single engine and wheel. The season's financial reckonings invariably show her owner quite a respectable saving over the steamer which she has replaced.

The best propeller boat in the Mississippi River trade is the lower coast packet Dependent. She is the latest example in the continuous evolution of the gasoline freight carrier, and has a reputation for regularity not surpassed by any steamer in the river. She is 95 feet long, with a beam of 21 feet, and is equipped with a 100 h.p. Wolverine, turning a big four-bladed cast steel screw. Besides the typical hold and deck house in which tons of oysters and vegetables find their way to the New Orleans market, an upper deck house has been provided for passengers, and there is rarely an empty state-room when the ship slips her moorings.

These river boats run regularly throughout the year, transporting garden products and fruit in summer and oysters and game in the winter seasons, going away from New Orleans on their trips some hundred miles down the river laden with variously assorted cargoes of general merchandise.

Probably the severest test to which the gasoline motor can be put is in the little open boats used by the individual oystermen who

Loading with freight for the lower coast.

Members of the old oyster fleet of New Orleans.

operate small beds, and who can ill afford a first-class outfit. Although they are supposed to lie in a country of continual roses and warm sunshine, the coast reefs are lonesome places at their best—fringing the edges of the apparently limitless areas of waving salt marsh grass, miles and miles away from civilization, and even solid ground long distances apart, except straight down a few feet.

In fair weather and foul, these oystermen are at work in their poorly constructed boats, with barely the necessities of life, to say nothing of comforts, their shaky, noisy engines pounding along, everything loose and rusted to such a stage that the average yachtsman wonders that it is possible that they run at all. But run they do, until they literally fall to pieces, at which point the "Dago" fisherman digs down in his clothes and deposits his hoardings of years with the builder of a new first-class boat. Theirs is a very hard life, but the gas engine has done more towards making things worth while for them than any one invention in centuries.

In the lumber trade in New Orleans, which is principally carried across Lake Ponchartrain

from the pine forests some fifty miles north of the city, the motor has aided in revolutionizing the transportation industry. In several instances steam engines have been replaced by gasoline, but as the boats have to come across some thirty miles of open water, the trip is often very slow for a low powered gasoline lighter. In consequence a sort of auxiliary arrangement has come into use which has proved entirely satisfactory. The time honored lumber schooner is retained, a light draft centerboard craft, from forty to sixty feet long, very full and beamy, with great carrying capacity. To the schooner's complement of sails has been added a heavily built motor boat about 22 feet long, equipped with a heavy slow speed motor. In a breeze the motor boat is not much of a drag towing behind the schooner, while lashed alongside in a calm or in the rivers and canals, a four or five-mile clip is easily attainable. The tender's work does not stop while the schooner is discharging or loading, as she is immediately pressed into service as tow boat, handling boats in the canals and puffing along with long strings of logs for the mills. This auxiliary arrangement has found great favor in the lumber fleet and is rapidly growing in popularity.

Although not in the same class with the freight carriers, but at the same time possessing quite a commercial value, is the new type of fast runabout which has been greatly developed in the last few years.

New Venus and Standard of the stern wheel and propeller types respectively.

It has become an indispensable part of the belongings of the average planter in the sugar and rice country south of New Orleans. Connected with the metropolis by numerous bayous and canals which form a veritable net work in Southern Louisiana, the owners of these craft need waste none of their time consulting railroad schedules, and missing trains after driving across miles of dusty roads.

Nearly all the plantations connect with New Orleans by water, and a matter of forty or fifty miles of canal is nothing to a smart runabout capable of twenty to twenty-five miles an hour. Quite a number of famous racers have already found homes in south Louisiana, and a new fleet is always building, speedier and more seaworthy than their predecessors.

Putting the Battery Out of Commission.

By C. Peterson.

IT will be remembered that there are two classes of battery: primary and secondary; that the three types commonly used in marine engine ignition are the familiar dry cell, the Edison-Lalande, both primary and the lead plate or storage cell, secondary. In the following discussion the dry cell has been purposely left out. No one thinks of hoarding up dry cells. The practice of giving them to the janitor for the club house bell is a good one.

The Edison-Lalande primary battery requires very little attention because the elements do not disintegrate when there is no current flowing. The only thing absolutely necessary is a fairly even temperature between 50 degrees and 75 degrees.

If there should be an unavoidable rise in the temperature it might be policy to look at the battery once or twice to find out if there has been any evaporation of the caustic soda solution. Any loss should be immediately replaced with either rain or distilled water. The writer once used, unconsciously, water heavily charged with iron; the battery did not act like a battery at all.

Be sure that the solution is even with the brown mark on the wall of the jar. The reason for this is that the copper oxide plate gives off a dust which rises and floats on the top of the solution just under the oil. If the solution is not high enough this dust will collect and form a bridge between the elements, short circuiting them and eventually eating the zinc element off at the line of the bridge.

One set of elements in a 6 cell battery will run the average boat about two seasons. However, to be absolutely sure of the condition of the elements, remove the porcelain top from one of the cells and wash off the attached plates in order to get rid of the caustic soda solution. It burns quickly and badly but may be readily neutralized by applying vegetable oil.

Take a sharp penknife and dig into the middle plate, copper oxide. The color determines its condition. If it is copper colored clear through, prepare to clean out the whole battery, the elements are exhausted. The copper oxide has been changed to pure copper and the zinc elements reduced to a skeleton, the zinc being held in solution in the electrolyte. If there is a black section under the copper film there is quite a lot of service left, all dependent upon the thickness of the black portion.

The elements should never be permitted to dry in the air as they are re-oxidized by absorbing the oxygen in the atmosphere. This results in an increase of the internal resistance of the cell which naturally lowers the current output.

When putting the elements back, douse them liberally with water and plunge into the solution quickly, in order that the paraffine oil will not adhere to them. The result would be the same as oxidizing, only the action would be temporary.

It might not be a bad practice to remove all the wire connections between the cells. This would avoid all possible chances of short circuiting although at certain times a short circuit is beneficial to this type of battery. Short circuiting is only done when a certain cell does not give off its full E. M. F. of 0.66 volts, due to the fact that the oxide plate has become tarnished through exposure and then the short circuit is made only through a very high resistance wire.

Storage batteries in order that the plates be kept in prime condition during a lay up require more attention than primary batteries. Assuming that the battery has been discharged, the first thing to do is to charge to about 2.4 V. per cell and then remove the electrolytic. Some advocate the saving of this although there seems to be no reason for so doing because the same density may be had when the new electrolyte is put into the cells. However, if it is to be saved, place it in new containers or those that have been used for electrolytic acid only—any impurity has a bad effect on the action of the acid.

As each cell is emptied, thoroughly flush it out with pure water to remove sediment and all trace of the acid; then fill with rain or distilled water.

(Continued on page 64.)

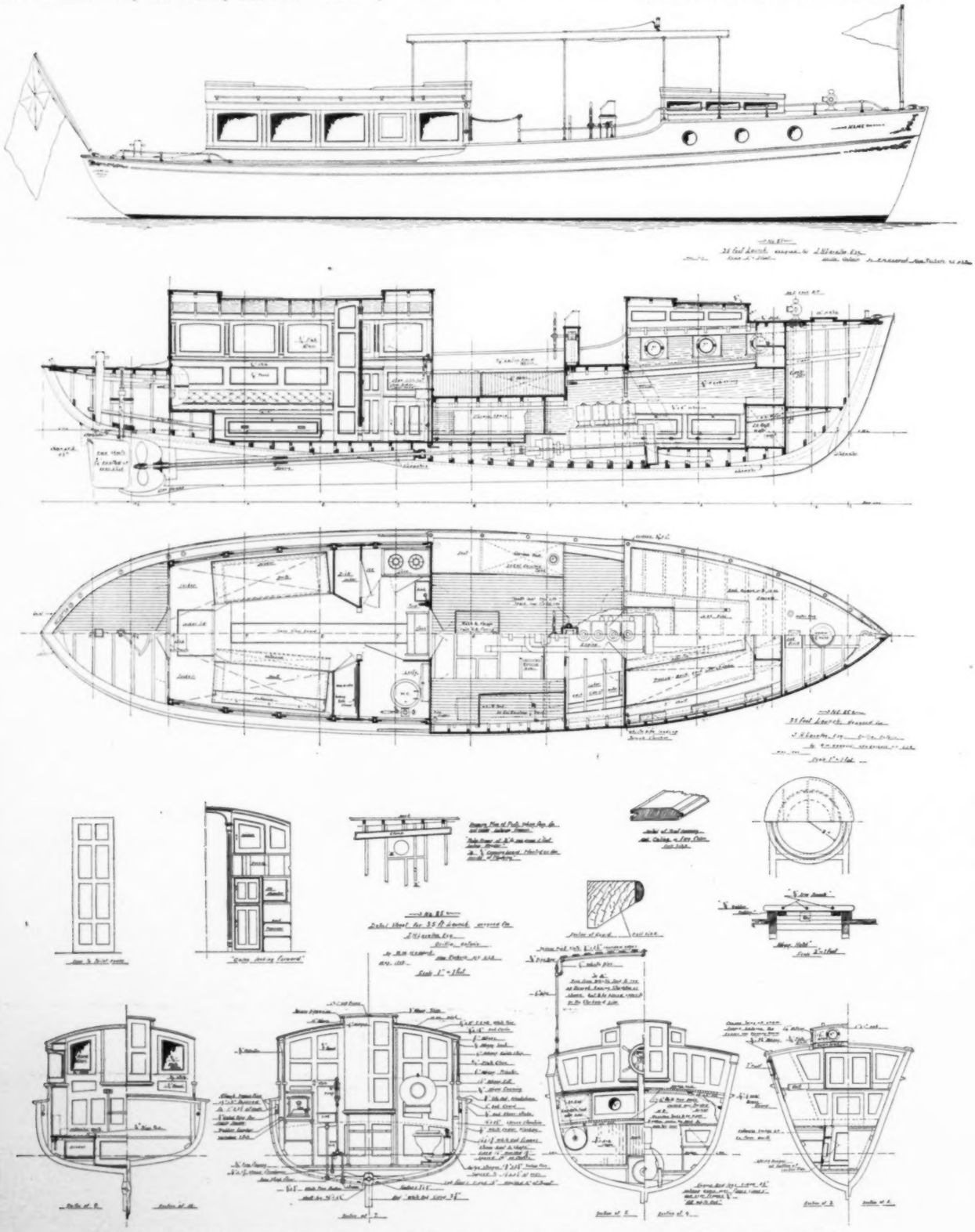
Volante, the 45-foot day cruiser of Mr. C. H. Tweed of New York. The engine is controlled from the forward cockpit by the man at the wheel. She has a 25 h.p. Jager motor which drives her at 12 to 13 miles an hour. She was designed by Swasey, Raymond and Page.

New Motor Boat Designs.

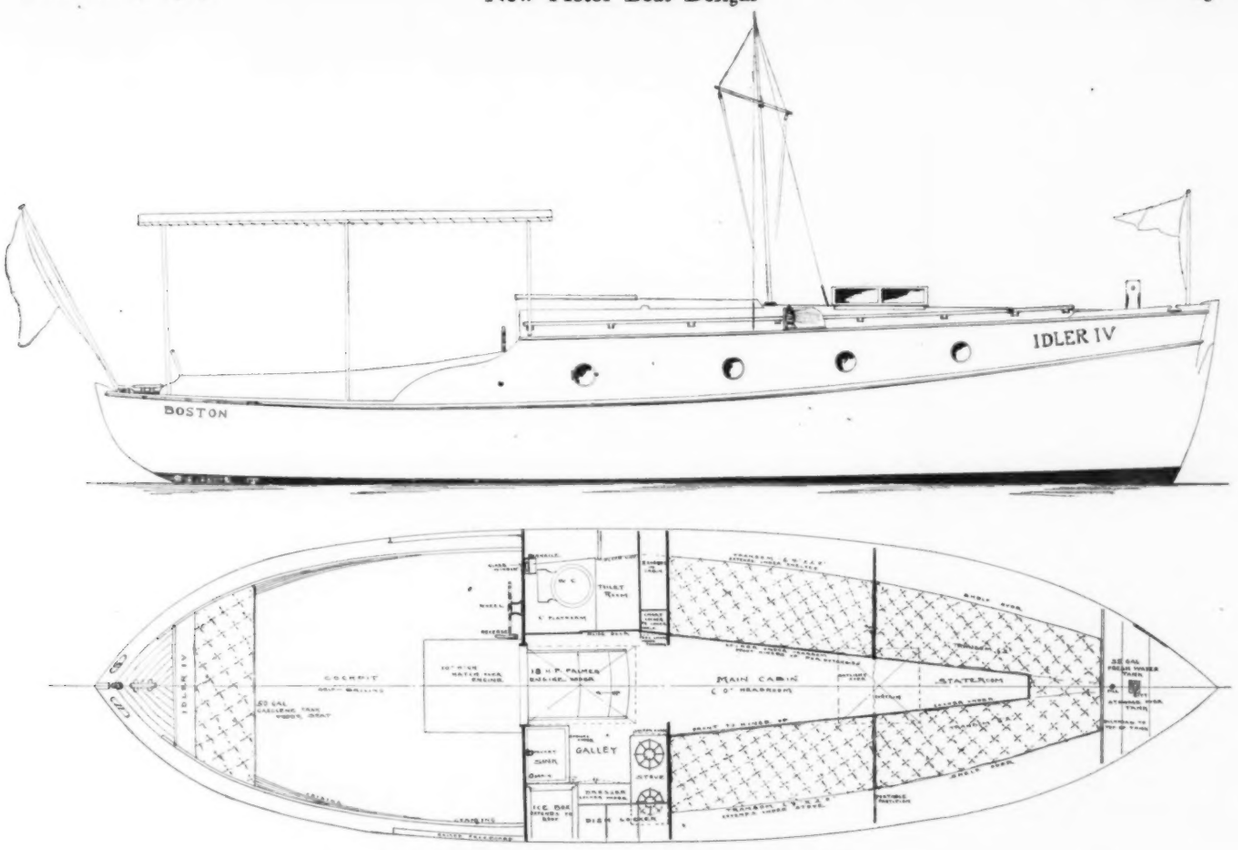
A 35-Foot Cabin Cruising Launch.

THE accompanying plans are of a 35-ft. raised foredeck cruising launch with cockpit in the middle of the boat. It is a type that is becoming popular with owners who cruise on inland and somewhat sheltered waters, although the high freeboard forward tends to make a very able and dry boat in a seaway and one that can live through any sea that is likely to be met with in the summer season.

The general dimensions are L. O. A. 35 feet 8 inches, beam 8 feet 4 inches, and draft 2 feet 9 inches. By placing the cockpit amidships some of the advantages of the bridge-deck feature of the larger cruisers may be enjoyed, as all are enabled to see over the roof of the fore cabin even when seated. Also a



Outboard profile, accommodation plans and details of a 35-foot cabin cruiser, designed by R. M. Haddock.



30-foot flush deck cruiser, designed by W. J. Deed, Jr.

more roomy cockpit with space for chairs is obtained and it is more remote from the exhaust gases which are to be led out through the stern.

The fore cabin contains berths for two persons and has the flywheel of the engine projecting sufficiently far into the after end of cabin to allow of good headroom in starting up. The bridge-deck also gives good room to get at all parts of the engine readily when necessary to work around it. The engine is a 25 h. p. Scripps and should be ample power to drive the boat along at a good cruising clip.

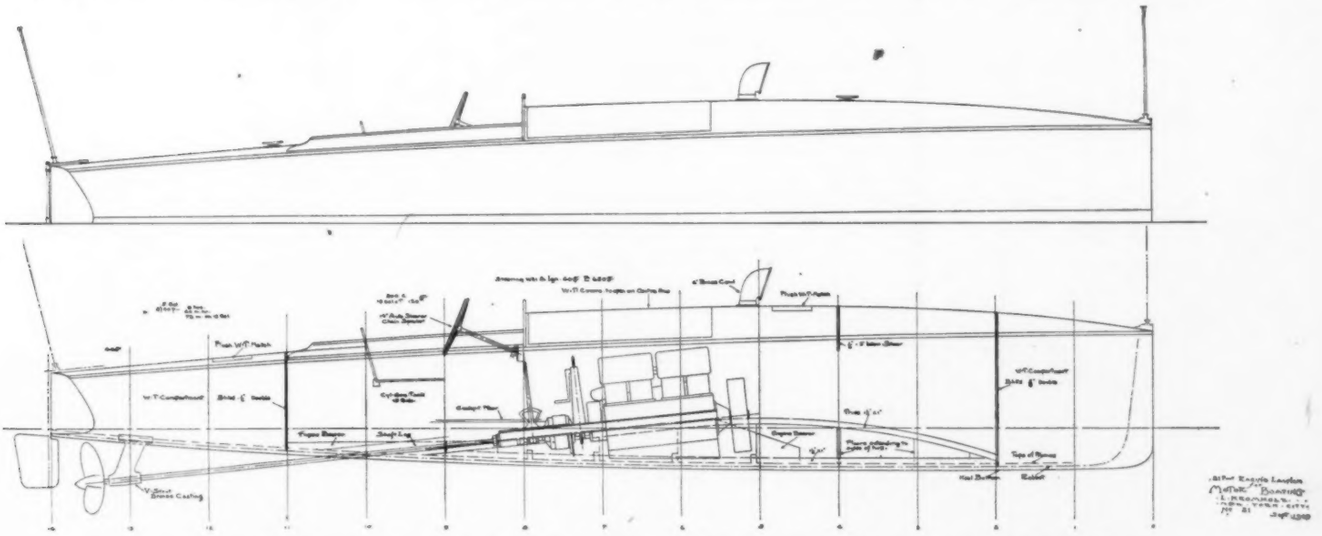
Gasoline is carried in tanks on either side of cockpit so arranged that none of the fuel can find its way below even if tanks should develop a leak or overflow in filling.

Reverse lever, spark and throttle controls are brought to the steering wheel that is on the after part of the bridge-deck so that it is strictly a one-man boat so far as handling is concerned.

On the port side of the main cabin is the galley with ice-box, stove, sink and locker for dishes. On the opposite side is the toilet-room with closet and folding lavatory. A 30-gal. fresh water tank is located under seat in fore-cabin. The transoms in this cabin have a long drawer under each which is a great convenience in getting at things as one does not have to lift up cushions in order to get at them. Also clothing such as dresses, etc., can be laid out full length, avoiding undue creasing and are kept from all dirt or water that might roll up from the bilge. Berths for two can also be made up in the cockpit which is arranged to be enclosed with curtains when desired. Altogether the boat should make a very desirable little cruiser. She was designed by R. M. Haddock, New Rochelle, N. Y.

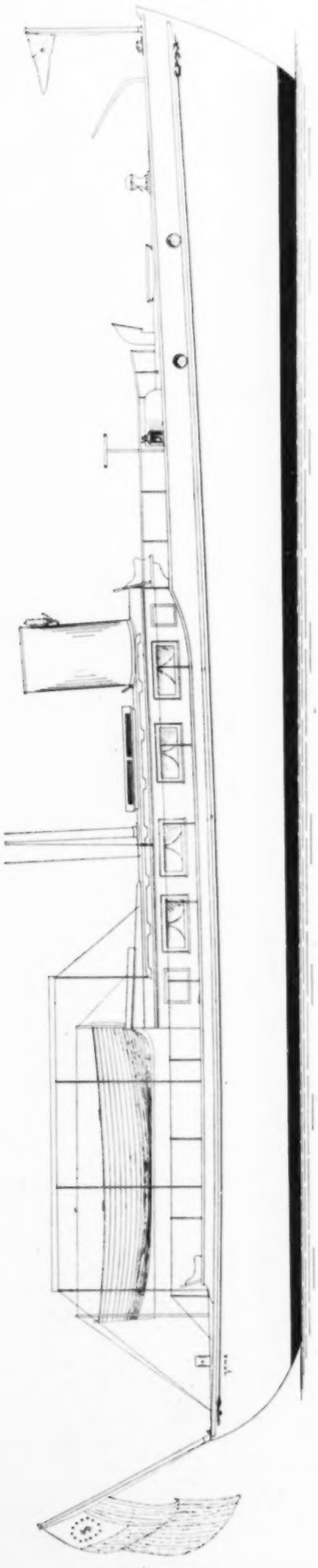
A 30-Foot Cabin Launch.

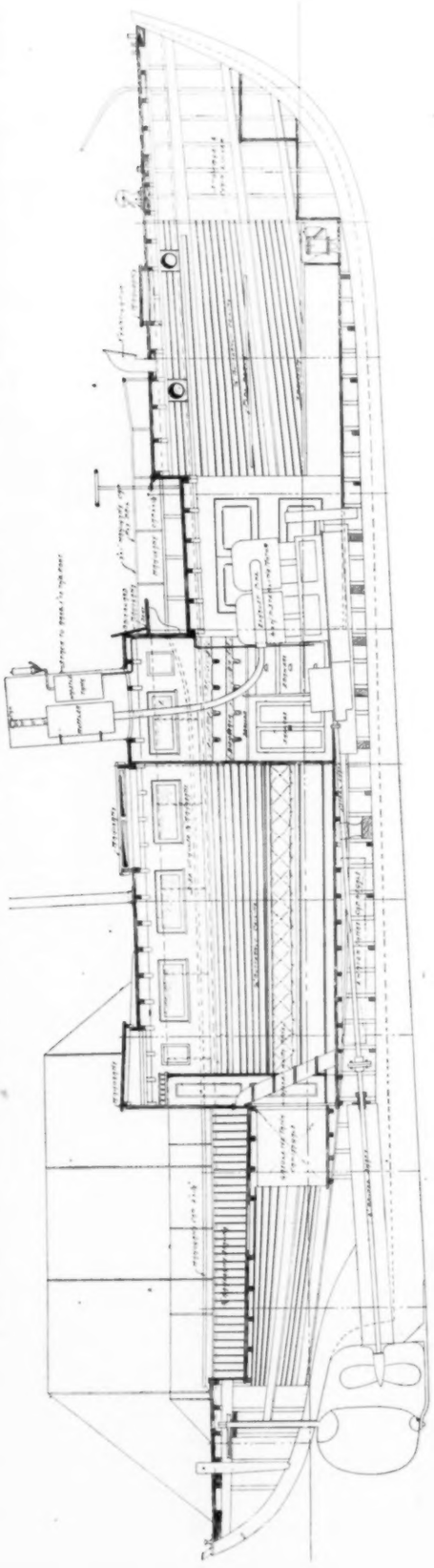
THE accompanying design shows the general layout of a popular type of 30-ft. cruiser about Boston this year. There are three building to this design by Wm. J. Deed, Jr., by The Sheldon Corp. of Neponset, for H. B. Willis, W. E. Waterman and A. S. Potter, all of Boston. The engines installed are Palmer 4-cyl. motors of 18, 14 and 10 h.p. respectively, giving speeds of 7½ to 9½ miles. The cabin has 6 feet of headroom, with

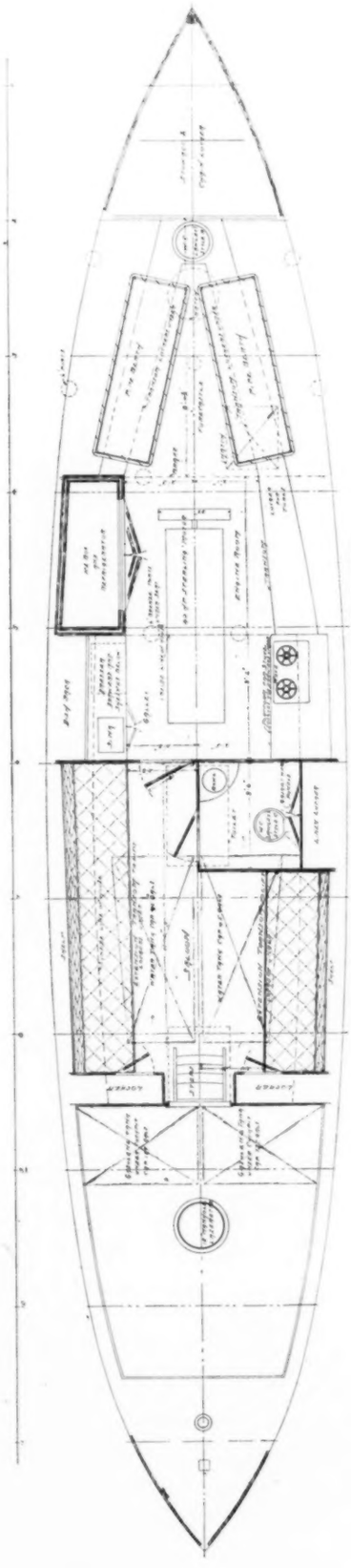


21-foot racing launch, designed by L. Kromholz. Note the arched engine support, which acts as a longitudinal stiffener.

separate toilet, galley, cabin and with portable partitions in place and curtains drawn, a stateroom. There are many novel ideas in the layout, the cabin transoms extend under the stove and shelf spaces and the chart locker is worked in over port transom. Tool lockers are provided under ends of transoms. A 50-gal. copper gasoline tank under after seat and a 35-gal. galvanized water tank piped to faucet at galley sink are provided. The galley layout is worth studying. The sink is installed with open plumbing and shelves underneath, with







Ruth—a 50-foot yacht tender, designed by Fred D. Lawley.

a side partition on the engine side. The ice box and refrigerator extend to roof, while the dish lockers run forward of that. The construction is oak, cedar, cypress and mahogany finish. About 800 to 1000 lbs. of cement ballast will be added.

An All-Weather 50-Footer.

WE are showing plans of a 50-footer, which was designed by the Bath Marine Construction Company for Mr. A. C. Schneider of the Vulcan Motor Company, of Seattle, Wash. The local conditions under which this must cruise, require extreme seaworthiness, a fair amount of accommodation and absolute protection of the helmsman from the weather. This necessitated an enclosed pilot house, although the boat may be steered from the deck in pleasant weather.

The engine room and galley are separated from the rest of the boat by a water tight bulkhead, thereby keeping the smells and gases out of the living quarters, while a slide in the bulkhead enables the steward to pass things into the dining room without reaching that place through the pilot house.

The saloon is arranged with one wide transom and one extension transom, while on the starboard side is the usual leaded glass side board and lockers. Aft of this on the port side is the toilet, with two large closets, lavatory and gun rack on the starboard side. Aft of this comes the owner's room with double berth, dresser and transom.

Sunk in the main deck is the pilot house, which is arranged with transom seat, and can be used as a smoking room. The gasoline is carried in two tanks aft of a gas tight bulkhead and aft of this is a lazarette, accessible through manhole on the deck. The freshwater tank is located in the engine room and is piped to the galley and to the toilet. This boat is propelled by a 40 h.p. Vulcan engine and is expected to give a speed of 12 miles per hour. She will probably be in all the races on the Pacific next season, as her owner is a thorough sportsman.

Ruth, a 50-Foot Yacht Tender.

MR. S. REED ANTHONY of the Eastern Y. C. at Marblehead, is the owner of the handsome power boat, the plans of which are shown herewith. Ruth is her name, and she is used as a tender to Mr. Anthony's handsome sloop yacht Doris. She is a fine powerful looking boat, designed by Fred. D. Lawley and built by the George Lawley & Son Corp. at South Boston, Mass. Her dimensions are 50 feet over all, 44 feet on the line, 9 feet 10 inches beam and 3 feet 9 inches draft. She is propelled by a 4-cylinder, 4-cycle 40 h.p. Sterling motor. Her keel and frames are of oak; she is double planked with cedar inside and North Carolina pine outside, and her outside trimmings and finish are of mahogany. There are two gasoline tanks under the cockpit, with a capacity of 140 gallons each, and also two water tanks holding 45 gallons each, under the main cabin floor.

Her main cabin which is the full width of the boat, is 11 feet long, the finish being butternut with mahogany trimmings. She has an extension transom on each side, with plenty of locker space underneath, also a clothes locker at the after end on each side. Forward and leading from the starboard side is the toilet, which contains the linen lockers, separated from it by basket-work panels. Forward of this is the engine room and galley. The stove is on the starboard side, and on the port side is the sink, dishrack, dresser, etc., also an extra large ice box and refrigerator.

Next comes the forecastle with quarters for two men, and in the extreme bow there is a storage and chain locker.

The steering is done from the bridge deck, forward of amidships, and the engine control is worked from the same place. She has a military mast, with lantern boxes, and carries her 12-ft. tender on davits aft, on the port side. The muffler and air tank for the whistle are placed in the stack.

A Comfortable 35-Footer.

THE design herewith by the Tarrytown Boat Works, shows a 35-ft. cruising boat, with 8-ft., 8-ft. 6-in. or 9-ft. beam as may be desired, and which is built for comfort and also a fair amount of speed. The requirements call for an able cruiser which will develop 12 miles per hour with a four-cylinder, 20 h.p. motor.

The cabin arrangement shows two full-sized berths in forward stateroom, with ample provision for ventilation overhead, four large port lights on the sides and one forward port light, which adds greatly to the ventilation of the cabin when running or at anchor. An auxiliary steering wheel may be placed at the forward end for use in stormy weather.

The toilet room is conveniently located to be accessible at all times. Has 6-ft. headroom and is amply large. Opposite is a clothes locker of liberal size. The main cabin has two full-sized berths. On the port side is conveniently located the galley for two or three flame stove, china and dish closets, and large ice box with storage capacity at top, center and bottom. Eight drop windows and skylight provide excellent light and ventilation.

The engine may be placed partly or entirely under the cockpit floor as the owner may desire.

The control and reverse lever is brought to steering wheel at bulkhead, so that one person can handle the boat easily making docks or moorings.

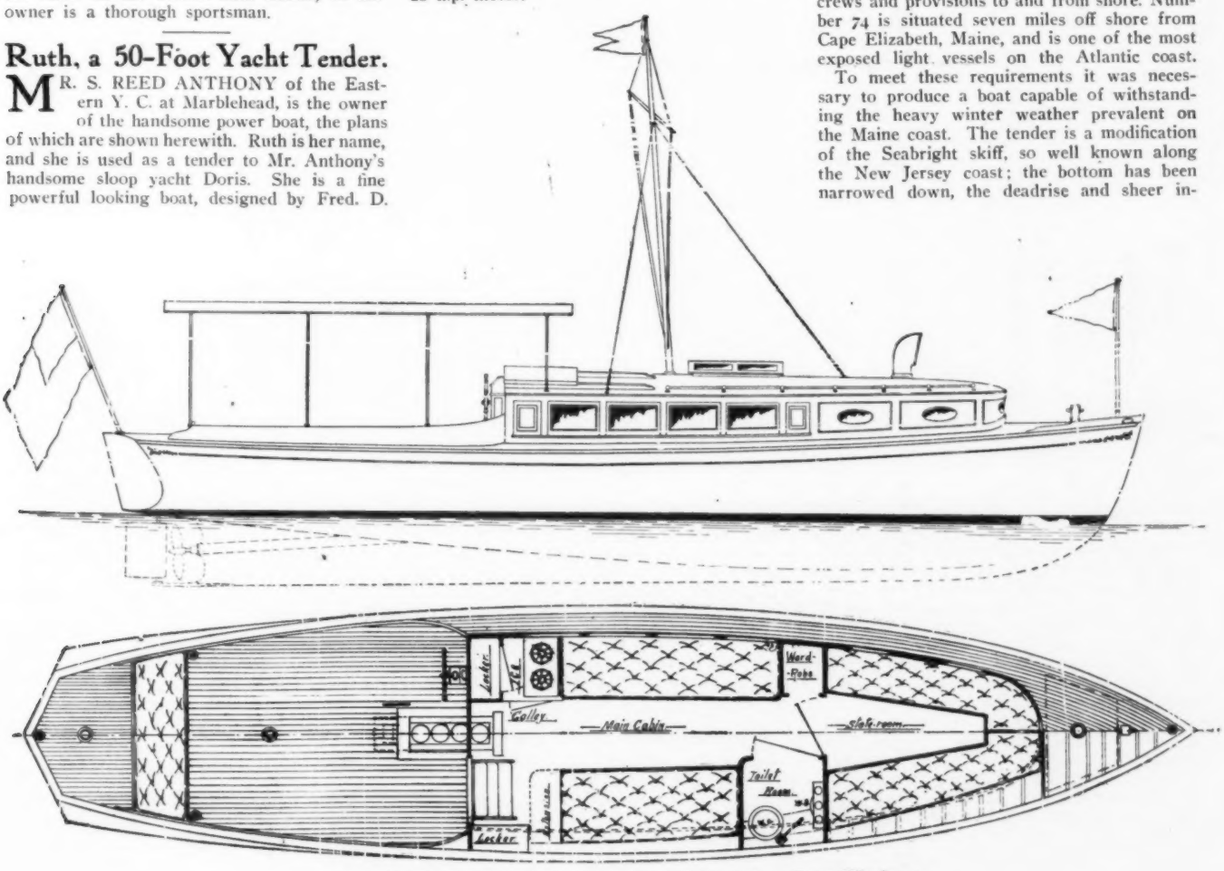
The cockpit is large enough to easily carry ten or twelve persons with comfort, and is the ideal place for meal service. Over the cockpit is a standing roof provided with side curtains.

Running forward on both sides of the cabin roof are hand rails, so it is unnecessary to go over cabin to reach forward deck where anchor and lines can be handled much more easily than on flush deck types.

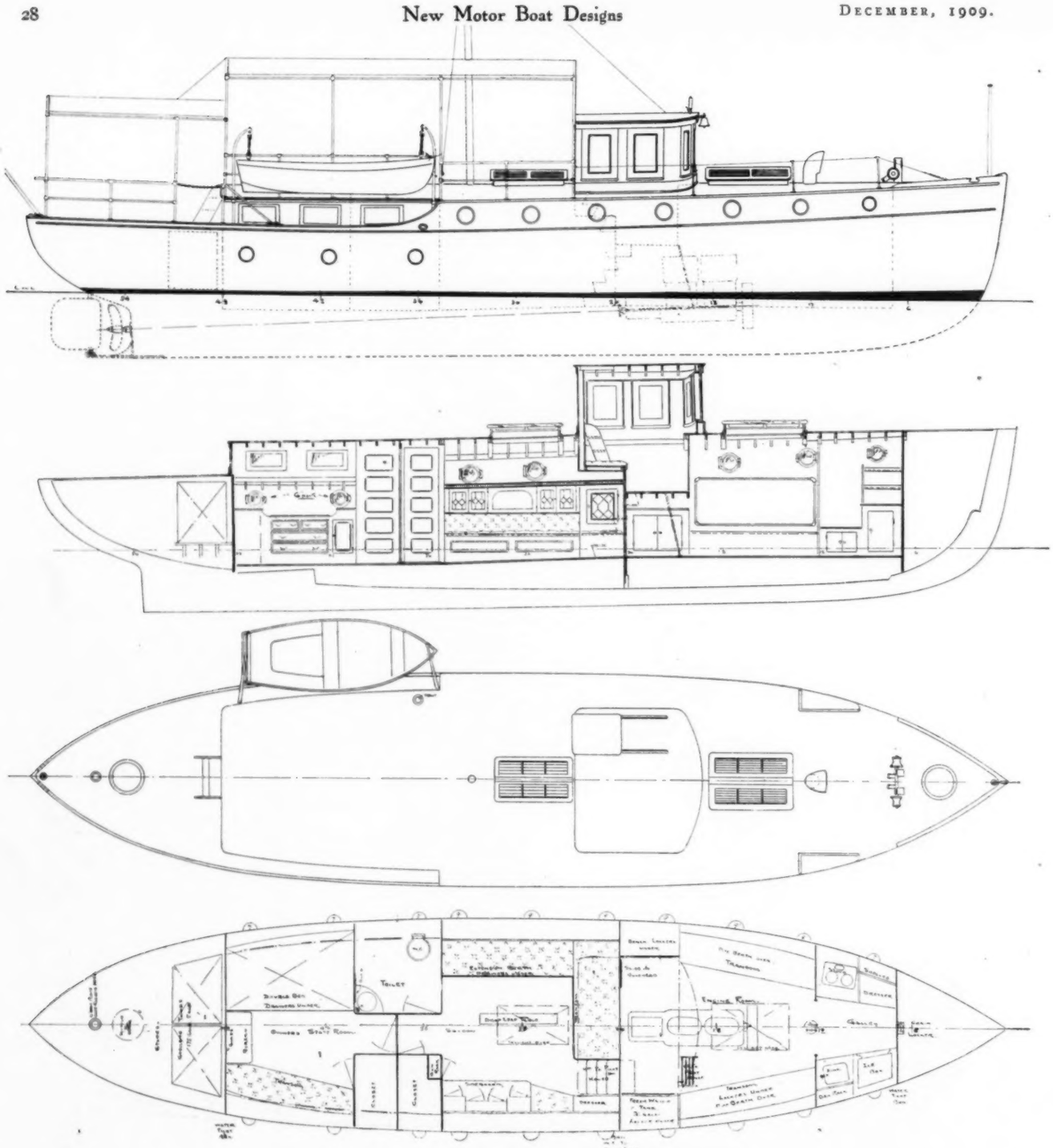
24-Foot Lightship Tender.

THE 24-foot U. S. Lightship tender whose plans are shown on page 29 is now building by W. D. Murray & Co., of Portland, Maine, from a design by Thomas P. Leaman, of the same city, to meet specifications furnished by the U. S. Government. The boat will be used as a service tender in connection with lightship No. 74, taking relief crews and provisions to and from shore. Number 74 is situated seven miles off shore from Cape Elizabeth, Maine, and is one of the most exposed light vessels on the Atlantic coast.

To meet these requirements it was necessary to produce a boat capable of withstanding the heavy winter weather prevalent on the Maine coast. The tender is a modification of the Seabright skiff, so well known along the New Jersey coast; the bottom has been narrowed down, the deadrise and sheer in-



A comfortable 35-footer, designed by the Tarrytown Boat Works.



An all-weather 50-footer, designed by Bath Marine Construction Co.

creased and the forward sections flared considerably. The length is 24 feet over all, beam 6 feet 8 inches, depth amidships 3 feet. Construction is heavy throughout and the material and workmanship are to be of the best. The specifications call for white oak bottom, keel and frames, the latter 1 3-16 inches square spaced 9 inches on centers. Planking white cedar, copper fastened over burrs.

The engine, a 12 h.p. Lathrop, is placed just aft of amidships under a hatch, with passage on port side. The cover is hinged on both sides and by removing two bolts it can be entirely removed, thus giving easy access to the engine for repairs or adjustments.

The same designer has also the contract for furnishing one 17 ft. and three 20-ft. boats of a similar type to be used by the lighthouses along the Maine coast. Any one desiring a thoroughly reliable and able power boat, capable of staying out in heavy weather, would find a boat of this type admirably suited for his purpose.

Two 98-Foot Motor Yachts.

ALBERT E. SMITH, Esq., and J. Stuart Blackton, Esq., of New York, have placed an order with the Electric Launch Company, for two 98-foot ELCO gasoline motor yachts to be built from the company's designs and be ready for delivery in the early spring of 1910.

The yachts will be built under the following dimensions: Length over all, 98 feet; length L. W. L., 90 feet; beam, 16 feet; draught, 4 feet 6 inches.

The yachts will be of the flush deck type, having two pole masts with lug sails. A low pilot house forward will be used as a dining saloon, handsomely finished in selected mahogany. Galley adjacent with crew's quarters forward and stateroom for engineer and captain. Water tight bulkheads of steel separate the engine room amidships from the quarters fore and aft.

Spacious quarters are provided aft for the owner, finished in white and dark mahogany, including owner's stateroom the full width of the boat with two brass bedsteads, chiffoniers and lockers. Bath is adjoining with large tub and the highest grade yacht plumbing. Sides of bath room will be tiled to the wainscoting with tiled flooring.

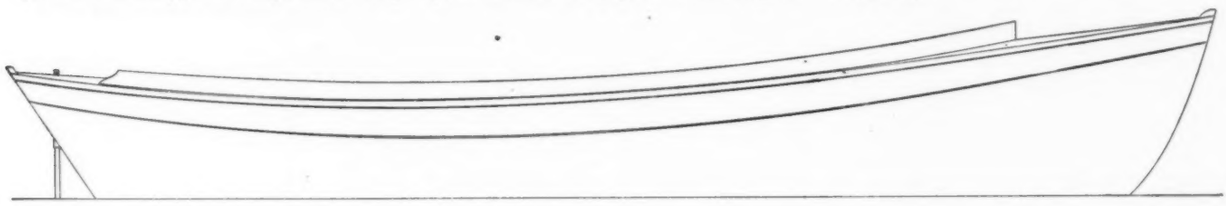
Main saloon will be handsomely finished in dark mahogany with ceiling panels in white

enamel and will have the usual furniture of bookcases, alcoves and table, the furniture throughout the yacht being of the Colonial style. Three other staterooms are provided for guests, with guests' lavatory. The best of materials are to be used throughout in the construction of the yacht. Canvas awnings will cover the main deck and pilot house, with deck railings. She will be steered from the deck of the pilot house.

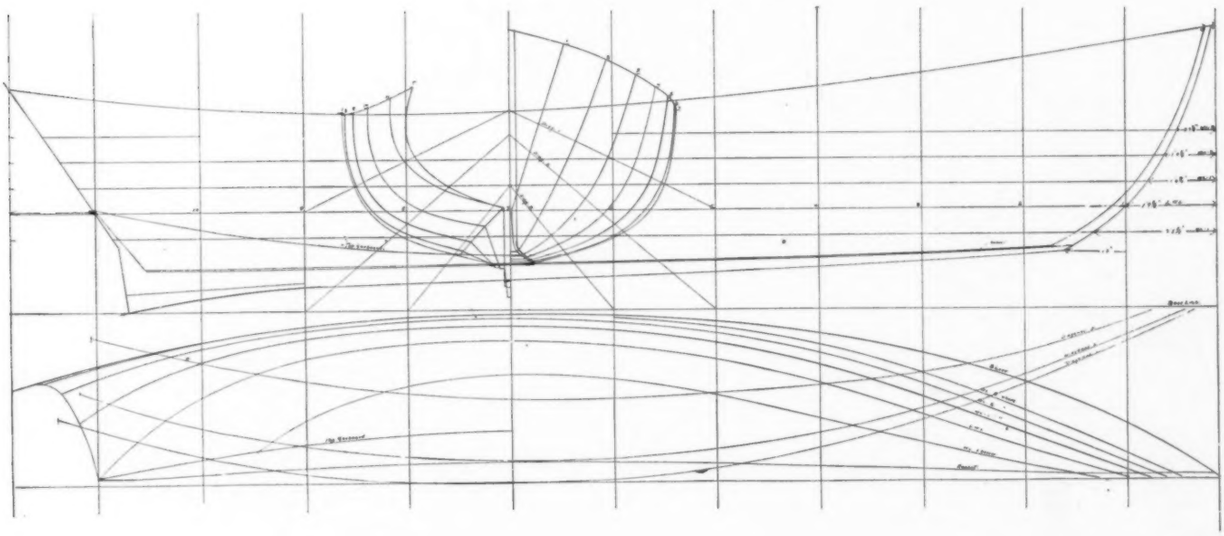
The power equipment will consist of two 75 h.p., six-cylinder Standard gasoline marine engines of their latest design and type. The fuel capacity is 800 gallons, installed in copper tanks amidships, tank compartments being made watertight above water line with drains overboard. The filling of the gasoline tanks will be from the outside of the vessel, the installation insuring the greatest safety in handling and storing the fuel.

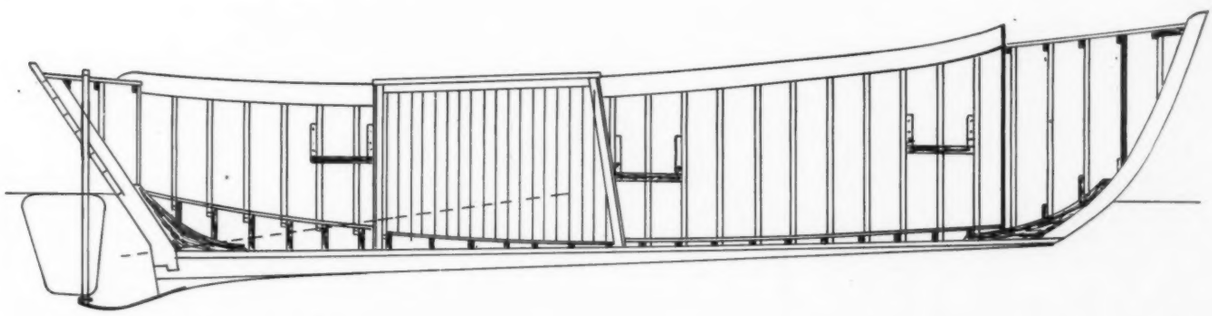
The usual equipment of small boats will be carried, including 12-foot dinghy and 16-foot power launch. In addition to these a 20-foot ELCO express tender will be carried, having a guaranteed speed of 22 miles an hour. Each yacht will have a wireless telegraph equipment and a complete electric light plant will be installed, operated by an independent engine with storage battery auxiliary power, special attention being given to the design of the electric fixtures. In addition, the yachts will be equipped with a powerful searchlight.

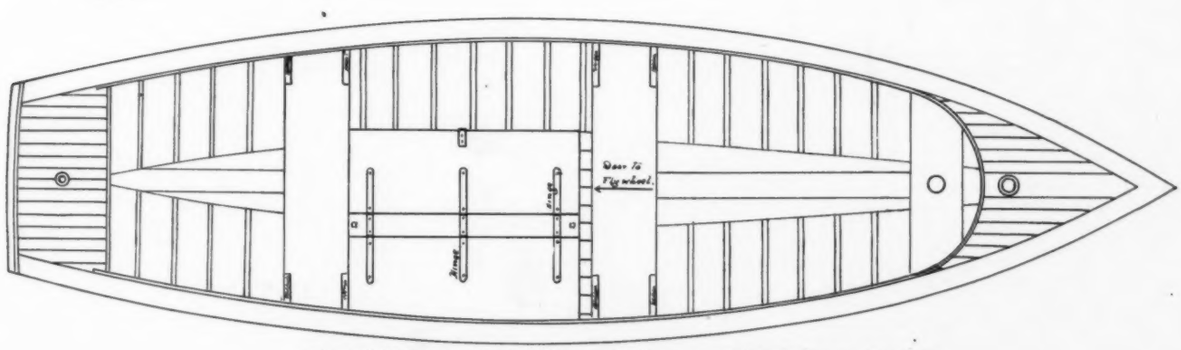
Mr. Smith and Mr. Blackton intend to cruise extensively in their yachts during the coming season and will probably keep the boats in commission throughout the year, using them in the South during the winter. The clearance from the water line to the top of the pilot house is within the height required to pass under the bridges of the Erie and Champlain Canals, permitting extensive cruising in Northern waters. A speed of 12 knots will be obtained from the boats and the contract calls for delivery on April 15, 1910. The plans are on page 30.



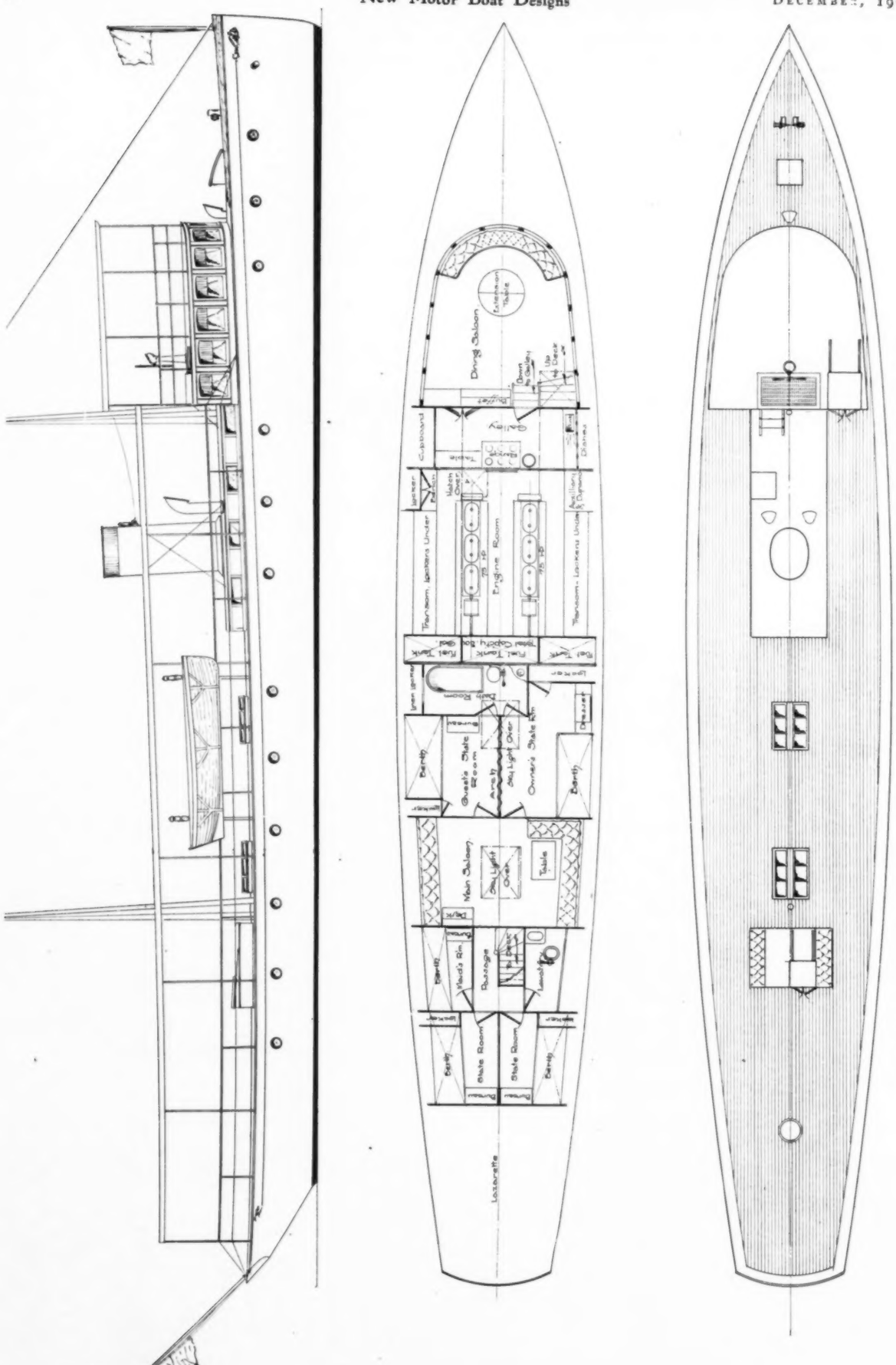
24 Ft U.S. Gov't Lightship Tender
Thomas P. Leaman







24-foot lightship tender by Thomas P. Leaman. Description on page 27.



Plans of the two 98-foot cruising motor yachts, designed by and building at the Electric Launch Company's Works.

Regarding Waterways Improvement

The Proposed Intra-Coastal Canal.

By Chester L. Wynn.

NOT many years ago when the construction of a big canal was proposed, one prominent legislator refused to give his assent to the undertaking because as he said "commerce would be floated on such a waterway on the tears of the taxpayers." That was the sentiment of the age, but just as genius and invention advance so has the Atlantic seaboard become so enlightened that a billion dollar intra-coastal waterway from Boston to Key West is more than a budding reality.

Whatever fleeting doubt there may have been that the intra-coastal project would not materialize was swept away when Congress in its Rivers and Harbors Bill authorized a survey of the entire inland waterway route. The building of the great canal will not actually begin until the engineers have made the survey, delved into the probable cost of the adjoining lands and then reported back to Congress, which must then make an appropriation to cover the cost of the project. But by the one official act of authorizing the survey the government has taken its greatest step towards cementing the North to the South not only commercially but socially.

That the intra-coastal canal from Boston to Key West with its western extension to New Orleans will be of vast usefulness in expanding the scope of the seaboard markets, in increasing the country's wealth and population, in saving millions in property and many precious lives from the graveyards at Hatteras and Cape Cod and be worth a dozen battleships in our national defence is becoming more manifest each year.

If, however, we lay aside the commercial or naval importance of deeper and improved waterways and harbors for the moment and confine ourselves to their availability for pleasure craft, we will find ample food for serious thought. Throughout the summer months every available stream and waterway pleasure ground in New England and along the Middle Atlantic States is awakened by the "chug-chug" of the rapidly moving pleasure boat propelled by gasoline. There is no longer any mystery with respect to the source of the small stream or large. But a trip along the Middle and North Atlantic coast during the months from October to May reveals thousands of these craft, large and small, taken out of commission, covered with tarpaulins and sheltered from the sleet and snow. When the owners of these boats are made to understand that the season is an open one along the Carolinas and in Florida and that every month would be available to them if they could migrate as the fish do from the approaching cold to the comparative warmth then they will imbibe some of the enthusiasm of the modern waterway's advocate. When it is cold and stormbound in New England the motor boat is in its hey-day in Florida; when the weather is uncomfortably warm in Florida, the New England boat season is in its prime. All that remains, therefore, to enable the motor boatman to have a continuous season is to give him a continuous inland waterway along the entire coast so that he may move into seasonable water without being held up at the bars or exposed to the rigors of deep sea sailing.

The one solution of the continuous motor boating season is the intra-coastal canal which has been started towards materialization through the persistent efforts of an organization known as the Atlantic Deeper Waterways Association. This organization was born in 1907 in Philadelphia when over 500 prominent business men and legislators met at the invitation of Congressman J. Hampton Moore, of Penna. and after holding sessions for three days attracted the attention of the 30,000,000 people on the Atlantic seaboard to their long-neglected opportunities for coastal improvement and commerical expansion. Starting out on a platform which called for Congressional action to the end that a continuous inland chain of waterways might be constructed from New England to the Gulf of Mexico the agitation was carried successfully into every state along the Atlantic. One year later double the original number of delegates met at Baltimore with Congressman Moore still at their head, and, as a result of their decided stand, the present survey was authorized.

President Taft was one of the principal speakers at the third annual convention of the association at Norfolk last month, and by his positive declarations that he will assist the Eastern movement, gave assurance that the coastal chain will eventually be linked up.

The cost of the great enterprise has been variously estimated from $100,000,000 to a billion dollars, but until the engineers have completed their work no one will know just what outlay will be required. This survey will be made with a view of having a minimum depth of 25 feet from Boston to Beaufort and from there to Key West a minimum depth of 12 feet.

The proposed intra-coastal waterway from Boston to Key West is tentatively planned along the following route: Boston to the Taunton River at Weir Village, to Fall River, to the protected waters of the Narragansett Bay, about three miles above Dutch Island Harbor, across a divide to the Pettaquamscott River, then through another small divide to Point Judith Pond, thence through the ponds and lagoons along lower Rhode Island to Watch Hill, into Little Narragansett Bay, passing Stonington Harbor, to Fishers Island Sound at New London; thence to New York Bay, up the Raritan River to New Brunswick, N. J., and into the Delaware and Raritan Canal, to Bordentown on the Delaware River; down the widening Delaware to Delaware City and into the Delaware and Chesapeake Canal, to the Back River and down the Chesapeake to Norfolk; then into the rivers and sounds along the coast of North Carolina and into Beaufort Inlet; from there into the Winyah Bay. Below that there at present exist a continuous chain of bays, lagoons, creeks and canals passable for the motor boat and which at a comparatively moderate expenditure can be improved to provide safe passage for vessels of a larger type.

Showing the route of the Intra-Coastal Canal from Boston to Key West.

Over nine-tenths of the tentative route is already at the disposal of the motor boatman if he would only realize it. The Atlantic Deeper Waterways Association is directing its efforts towards an improvement of the commercial and naval advantages of the continuous inland route and thus is dealing with 25 foot depths. The motor boatman should not and does not object to that depth but at present outside of a very few short divides that continuous route that the government is preparing to spend millions upon is open to him.

Congressman Moore, the father of the movement, has traversed practically the entire route from Narragansett Bay to Key West in a motor boat. He did it with the desire of becoming better acquainted with his own project. Now he knows the delights of drifting from river to river, through canals leading into the richest of farming districts, the educational value of stopping off for a day in the lumber camps of Pamlico Sound, the novelty of skimming over picturesque sheets of water in the Dismal Swamp. What he learned of the commercial value of the inland route he with his colleagues in the House used to advantage in bringing about the authorization of the survey.

If the report of the engineers working on the survey proves to be favorable, as no doubt it will, and the continuous chain is completed as proposed, will not the advantage to both the North and the South be demonstrated? Consider the saving in time as for instance in the making of a shipment by water from Philadelphia to Baltimore. To sail from one to the other by the outside route means to round the Capes of Delaware and Maryland, a distance of 318 miles. Yet the two cities are but 90 miles apart. A simple cut of 13 miles across the State of Delaware saves the difference between the inside and outside distances. The canal already has an average depth of 9 feet and a Congressional committee has already recommended the taking over of it by the government. The commission proposed that it be made a ship canal with an average depth of 35 feet and estimated the cost of construction to be about $20,000,000.

At the northernmost end of the proposed chain a canal is already in the course of construction across Cape Cod from Buzzards Bay to Massachusetts Bay, a distance of about 8 miles. This cut will mean a saving of 148 miles from the outside route. But it will not accomplish the true intention of the Deeper Waterways advocate. It does not eliminate the dangerous waters of Point Judith. The stretch of navigation from Race Rock at the eastern end of Long Island Sound to the

mouth of Buzzards Bay through which the Cape Cod canal must be reached, about 60 miles, is perhaps the scene of more marine disasters accompanied by serious loss of life and property than any like distance along the Atlantic coast, save from Provincetown to Nantucket Sound. And this holds true not by reason of more severe storms and heavier fogs than elsewhere, although there is an abundance of both, but largely from the enormous traffic passing. The Hens and Chickens Reef near the mouth of Buzzards Bay was the scene of the wreck of the U. S. cruiser Yankee, costing the government originally $600,000 besides a large outlay for her conversion into a cruiser. Ten miles to the southward is the wreck of the Windsor Line steamer Trojan, which carried a half million dollar cargo into 14 fathoms of water. Almost within rifle range is the wreck of the British steamer Silvia, lost a year ago. A little to the westward on the east shore of Block Island another Windsor Liner, the Spartan, went down. Almost on the same spot the U. S. Naval collier Nero grounded, but after much labor, expense and anxiety was floated and taken to New York, repaired, and is again in service. At the same place the U. S. tug Leyden was wrecked and a total loss. On the beach between Watch Hill and Point Judith the tug Hercules with six barges was driven ashore to be broken to pieces and a total loss. A little to the west of that spot is the scene of that terrible calamity, the loss of the Joy Liner, Larchmont, from which the frozen bodies of the passengers and crew of the ship were washed up on the shores of Block Island.

It is to relieve the mariners from the risks of navigating this ocean reach that the coastal canal behind the natural breakwater which forms the lagoons along the Rhode Island coast is being furthered. Of the 31½ miles of proposed safe waterway, 24½ miles are now flowed by tide water and only 7 miles will have to be cut. From Point Judith Pond to the Pettaquamscott River a short divide with an elevation of about 30 feet will have to be cut and from that river to the waters of Narragansett Bay a divide of three miles breaks the continuity of the chain. However advantageous a tide level canal from Cape Cod Bay to Buzzards Bay might be in saving distance for steamer traffic the true route for all classes of vessels is undoubtedly over the projected waterway from New London via the Rhode Island and Narragansett Bay to Boston Harbor.

The New Jersey link in the continuous waterway scheme, the Delaware and Raritan canal from New Brunswick to Bordentown on the Delaware River, is one of the most important of the whole route. It is not being developed and its apparent antiquity and ancient features are most marked. It carries a depth of 7 feet only and is 44 miles in length, including the windings of the Raritan River to Perth Amboy. Its opening as a ship waterway would mean a saving of 184 miles between New York and Philadelphia.

From Bordentown the motor boatman will run the length of the favorite course of the Philadelphia enthusiasts. The Delaware River as one goes south from Philadelphia can become as choppy as the motor boatman would wish for. Although 90 miles from the sea, and fresh water, the river responds to the tides in their rise and fall. Along this part of the Delaware the many coves and back channels are swarmed with the craft of the various motor boat clubs. At Delaware City a short rest must be taken while the locks raise the boat so that it can float into the 13-mile canal. The inland cruising craft then penetrates somewhat of a wilderness broken by peach orchards and fertile farms here and there until it noses into Chesapeake City where it is dropped via the second lock encountered on the trip into the Back River of the Chesapeake Bay.

From here the course leads southwestward to North Point Creek and, by pursuing the westward shore, to the Patapsco, the beauties of which have been described before in MOTOR BOATING. The best course to Norfolk and Hampton Roads, the scene of the most important naval manoeuvers on the Atlantic coast, is along the western shore of the Bay.

The Elizabeth River is the first leg of the next link below Norfolk. Passing the Norfolk Navy Yard the Chesapeake and Albemarle Canal or the Dismal Swamp Canal is entered. The Chesapeake and Albemarle runs due east, 15 miles to North Landing River, while the Dismal Swamp Canal runs at right angles or to say south, although both connect the same waters. The former affords the best course, however, for the motor boat trip to the South.

The Chesapeake and Albemarle cut passes through an exceptional stretch of swamp land and into the North Landing River, to Currituck Sound. Through the "North Carolina cut"—another short strip of canal—Currituck Sound is left behind and the North River entered. This leads to the Pamlico Sound. Crossing this water the mouth of the Adams Creek, a branch of the Neuse River is reached. This is the starting point of a ship canal which is in course of construction and which will give Beaufort an improved inland waterway to Norfolk and beyond while opening Pamlico Sound to heavy barges.

From Adams Creek the going is a trifle tedious but not more than enough to add spice to the navigation of a motor boat. The course will eventually lead up Davis Creek, on the line of the canal now being built, to the head of Core Creek and then into the Newport River. But at present the route leads from Adams Creek, through Harlow Creek and the Harlow Canal (now abandoned but navigable for motor boats) and into the Newport River, which passes out to sea at Beaufort Inlet between Beaufort on the north and Morehead City on the south.

From Beaufort the course leads through the sounds to Cedar Point and Sheads Ferry to Sloop Point, in the middle of the coast of Onslow Bay; thence to Smithville on the channel cutting Smiths Island from the mainland at Cape Fear, into Long Bay and along the lagoons of South Carolina to Georgetown; thence through the canals and bays which are marked and easy to distinguish to Charleston, and then to Savannah.

From there the course takes almost a straight cut through the channels behind Ossahan, St. Catherines, Black Beard, Wolf, and St. Simons Islands into the St. Andrews Bay, then past the Cumberland Island into Cumberland Sound and the City of Fernandina. A short cut back of Amelia Island brings the tourist to Jacksonville.

Here is the one break of any size in the projected continuous chain. For forty miles the course must needs at present lead on the outside to Holly Hill at the head of Mosquito Lagoon. From there the inland chain is complete and along the following course: into the Indian River and through the canals of the Florida East Coast Railroad to Biscayne Bay, to the Bay of Florida and then to the Keys.

Motor Boat Shows of 1910.

Haverhill, Mass.

The Crescent Motor Boat Club will conduct an exhibition of boats, engines and accessories, at Haverhill, January 10 to 17. The show will be held in Tanner's Halls.

Boston.

The exhibition of the New England Engine and Boat Association will be held in the Mechanics Building, January 22 to 29. This will be under the management of the secretary of the association, Chester I. Campbell, 5 Park Square, Boston.

New York.

The motor boat show of the National Association of Engine and Boat Manufacturers will open at Madison Square Garden at noon on February 19 and close at 11 P. M. on February 26. All communications regarding floor space, etc., should be addressed to the manager of the show, J. A. H. Dressel, 138 W. 42d St., New York City.

Buffalo.

Buffalo's third annual Power Boat and Sportsmen's Show will be held at Convention Hall, March 21 to 30, under the management of the Buffalo Launch Club. Communications should be addressed to Dai H. Lewis, 760 Main St., Buffalo.

Chicago.

The Chicago Show of the Western manufacturers will be held March 26 to April 2, in the First Regiment Armory, 16th St. and Michigan Ave. This will be under the management of Chester I. Campbell, who also manages the Boston show.

Palm Beach Races, 1910.

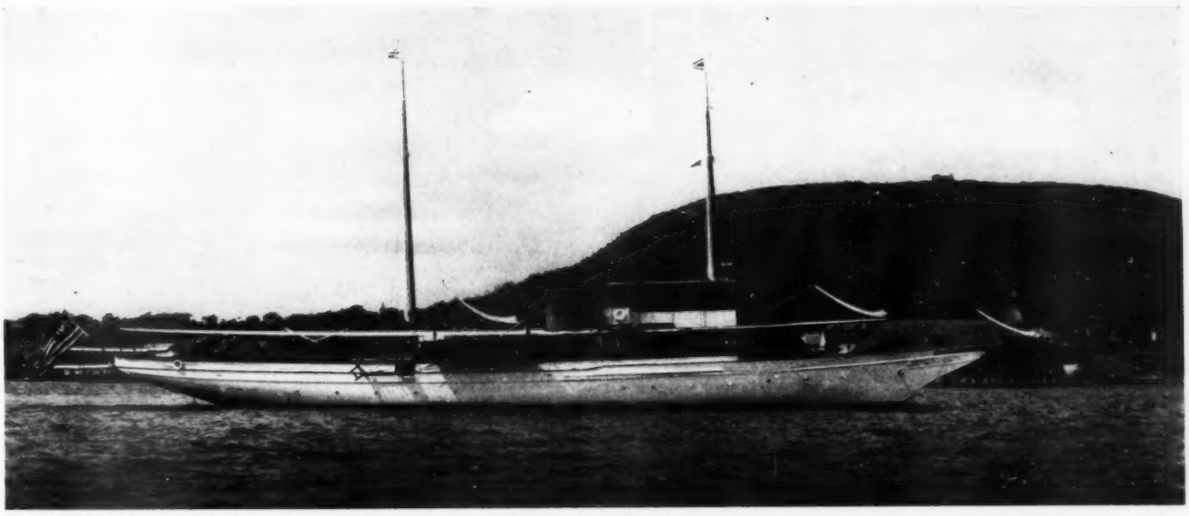
Schedule.

Tuesday, March 15.—Speed Record Trial, average of 6 trials over the mile course, Palm Beach Cup; Speed Contest, Florida designed and constructed boats only, no time allowance, 9 miles, the Association Cups; Class A, all boats, A. P. B. A. handicap, 9 miles.

Wednesday, March 16.—Class B. For boats under 32 feet. L. W. L. 4½ miles. Class C. For boats over 32 feet. L. W. L. 4½ miles. Class BC. For all boats. 4½ miles. Class BC. For boats of all lengths. 18 miles.

Thursday, March 17.—Class D. For boats under 17 miles speed. 4½ miles. Class E. For boats over 17 miles speed. 4½ miles. Class DE. For all boats over 12 miles speed. 9 miles. Speed Economy Test.

Friday, March 18.—Endurance Contest for all boats over 20 miles speed, 103.5 miles. Palm Beach Grand Prize; Consolation Race, all boats over 12 miles speed, 4½ miles.



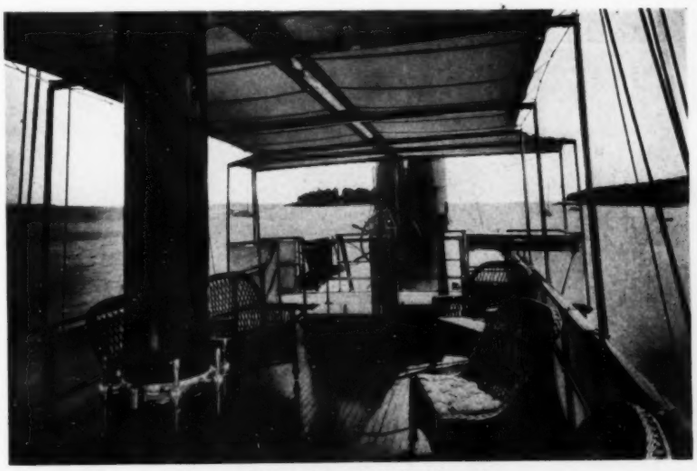
Monaloa is one of the largest motor yachts afloat.

Monaloa--A 130-Foot Cruiser.

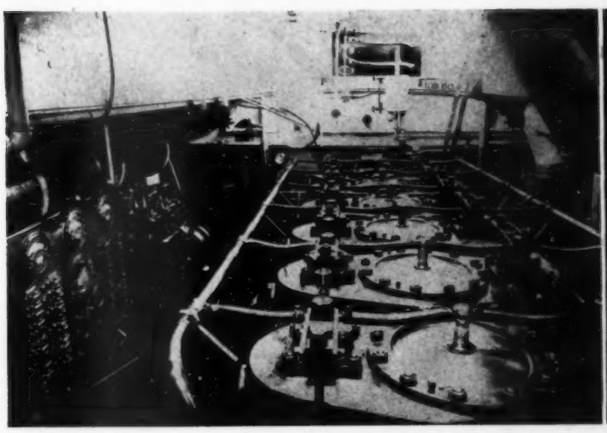
THE Monaloa, built this season for C. B. Borland, of Chicago, is one of the largest motor yachts afloat, and for that reason has attracted considerable attention. The boat was designed by Arthur Binney. She is about 130 feet over all, 105 feet waterline, 15½ feet beam, and about 8 feet draft. Her motive power consists of a 500 h.p., double-acting Standard engine, which gives the boat an easy, all-day cruising speed of 13 knots, or about 15 statute miles.

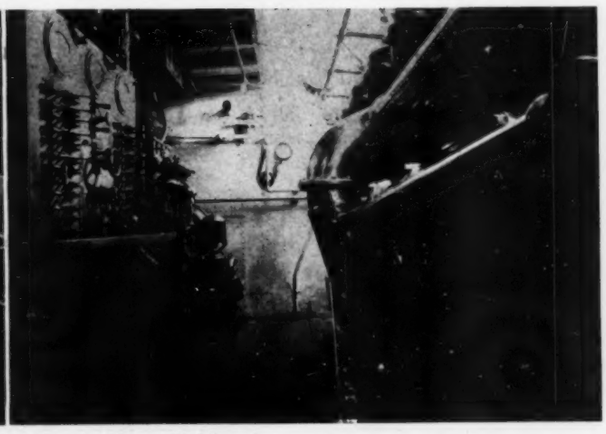
The hull is of the very best construction, double planked, and with deck houses and all deck trimmings of teak. The deck house, which is about 28 feet long, contains a dining room in the forward end about 15 feet long, and in after end a smoking room about 9 feet long. Between the dining room and smoking room on the port side of the deck house is the pantry, fitted with all necessary china lockers, etc., a sink, small ice chest, and dumb waiter and ladder leading to galley below. The entire inside of the deck house (including the pantry) is paneled in mahogany. On top of the deck house, at the after end, is a bridge extending to the rail at either side. This bridge is perfectly appointed with Cory telegraphs, Collamore chart table, lockers for marine glasses, clock, etc. There is a low steel house over the engine room, aft of which the deck is flush, and with the overhanging English stern gives an unusually large amount of deck room. Monaloa carries the usual equipment of boats, including an 18 foot motor launch, a good, able, seaworthy boat.

Below deck the accommodations are excellent. The after part includes a large double stateroom for the owner with toilet and bath connecting. Also a large double stateroom for guests, with toilet, and another large double stateroom with toilet, forward of the engine room, immediately under the smoking room. There is also a main cabin aft about 12 feet long with wide transoms, which can be used as berths when required. This after cabin is an unusually good feature for a cruising boat. Often, in cold or wet weather, it is a much pleasanter room to use than the usual dining room in the deck house, though of course the smoking room on deck also makes a comfortable lounging room. Below deck, forward, is a combination galley and mess room about 10 feet long, perfectly appointed, and excellently arranged. Over the range is a hood, ventilating into the smoke stack, so that most

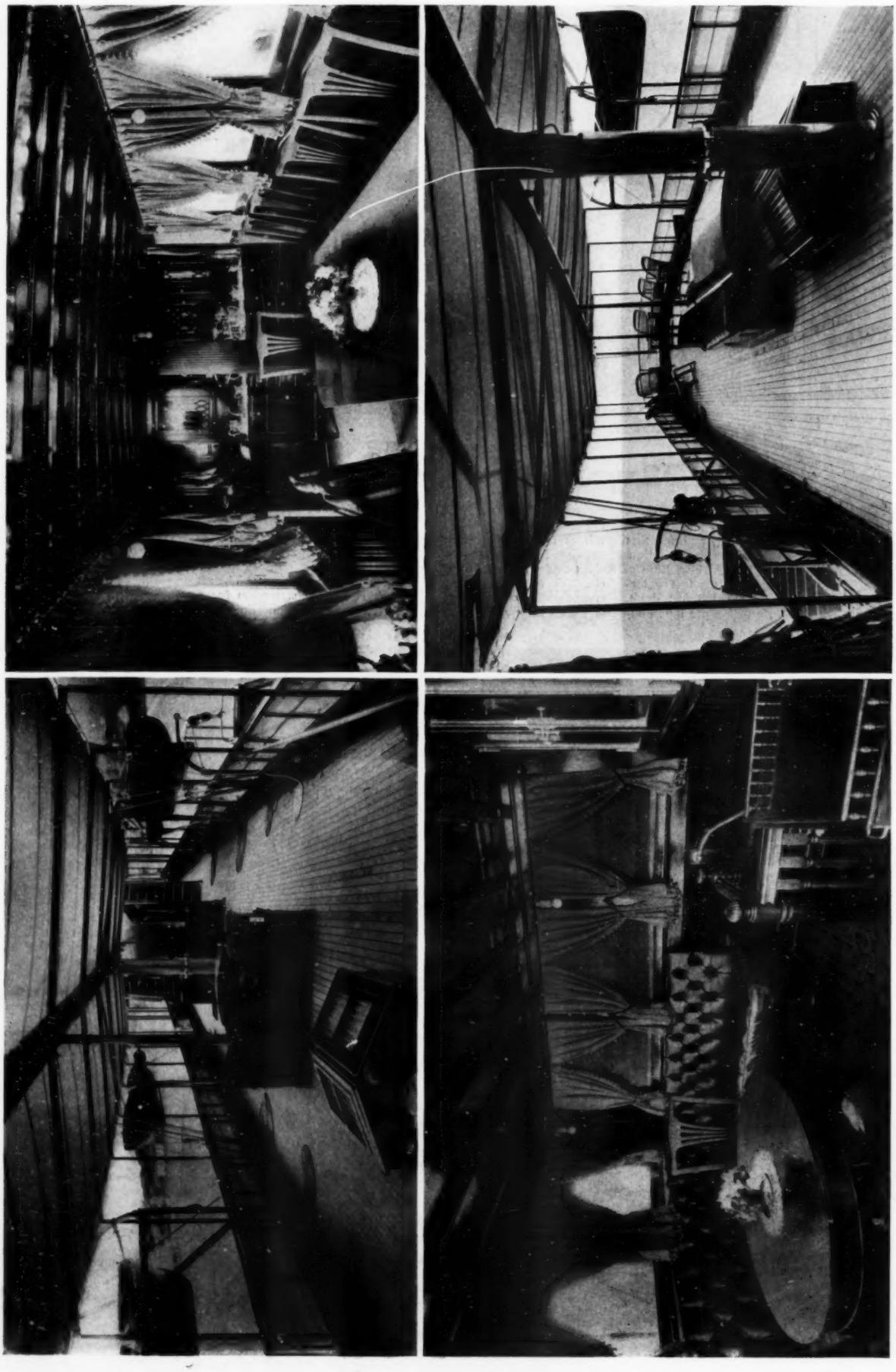


The bridge-deck looking aft.

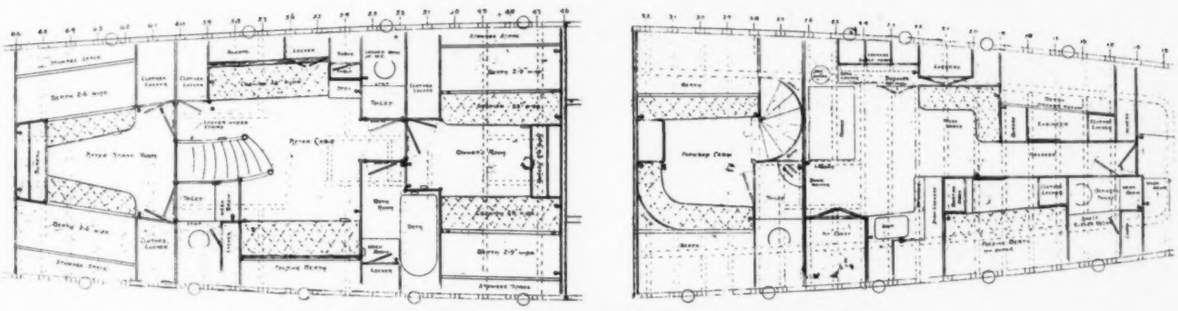




Two views of the engine-room of the Monaloa showing switchboard, pumps, etc.



Monaloa.—Above on left, the after deck looking forward; on right, dining saloon, looking aft. Below on left, smoking room; on right, after deck, looking aft.



The accommodation plan of Monaloa with amidship section removed.

of the heat and odors of cooking are carried through this into the stack. Forward of the mess room are staterooms for the captain and engineer, besides the officers' toilet. The forecastle has ample accommodations for six men with lockers, wash basin, toilet, etc.

The whole finish of the owner's quarters is most attractive, being in mahogany and white with parts of the bulkheads and walls covered with cloth, giving a very tasteful and pleasing effect. In each stateroom there are unusually large clothes lockers, large bureaus, full length drawers under berths; in fact every detail for the comfort of the owner and guests has been worked out thoroughly.

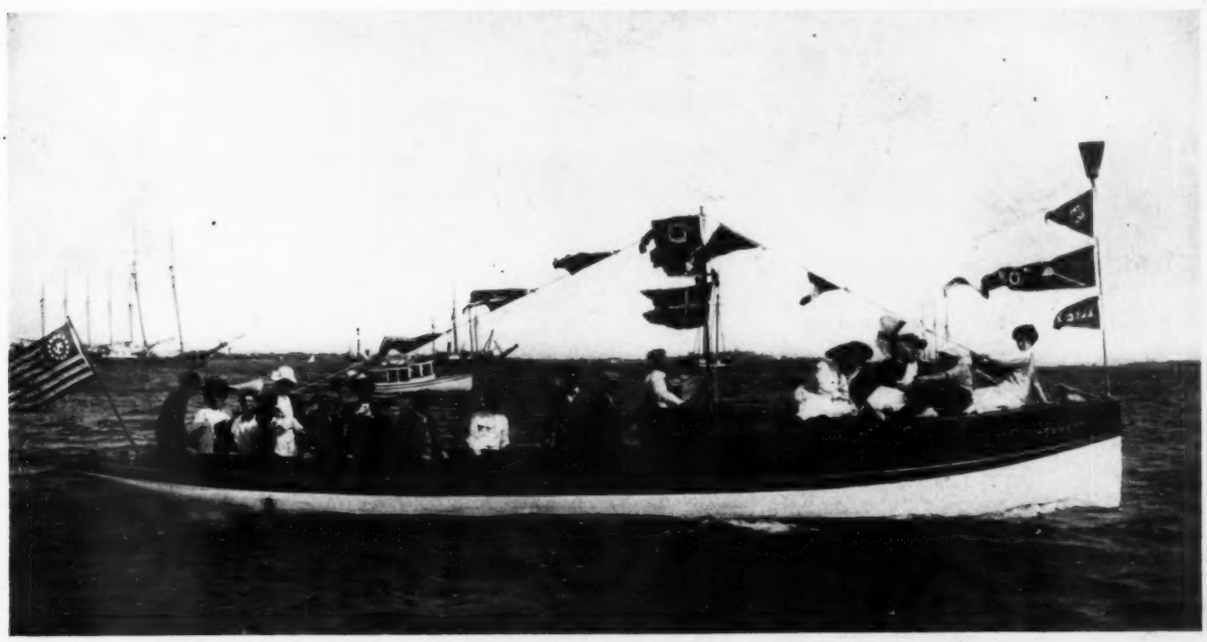
The after companionway.

In the engine room there is a 14-k.w. generating set, with the usual storage batteries, etc. The windlass is operated by electricity, as is also a large exhaust fan installed to draw air from all the bilges. With this fan the boat can be kept perfectly sweet and dry, and it has proved to be a very necessary feature. The boat is lighted throughout with electricity, a large, powerful searchlight being located on the foremast.

One of the novel features is the fuel installation. There are three tanks built of very heavy copper, holding collectively about 1,800 gallons. These are located in a steel watertight compartment between the engine room and the owner's state-room. This compartment is lined with copper to a distance of about 2 feet above the load waterline, and has sea connections at each side with shut-off valves. The idea of this arrangement is that in case of a leak in the big tanks, the compartment can be flushed, and the gasoline run overboard.

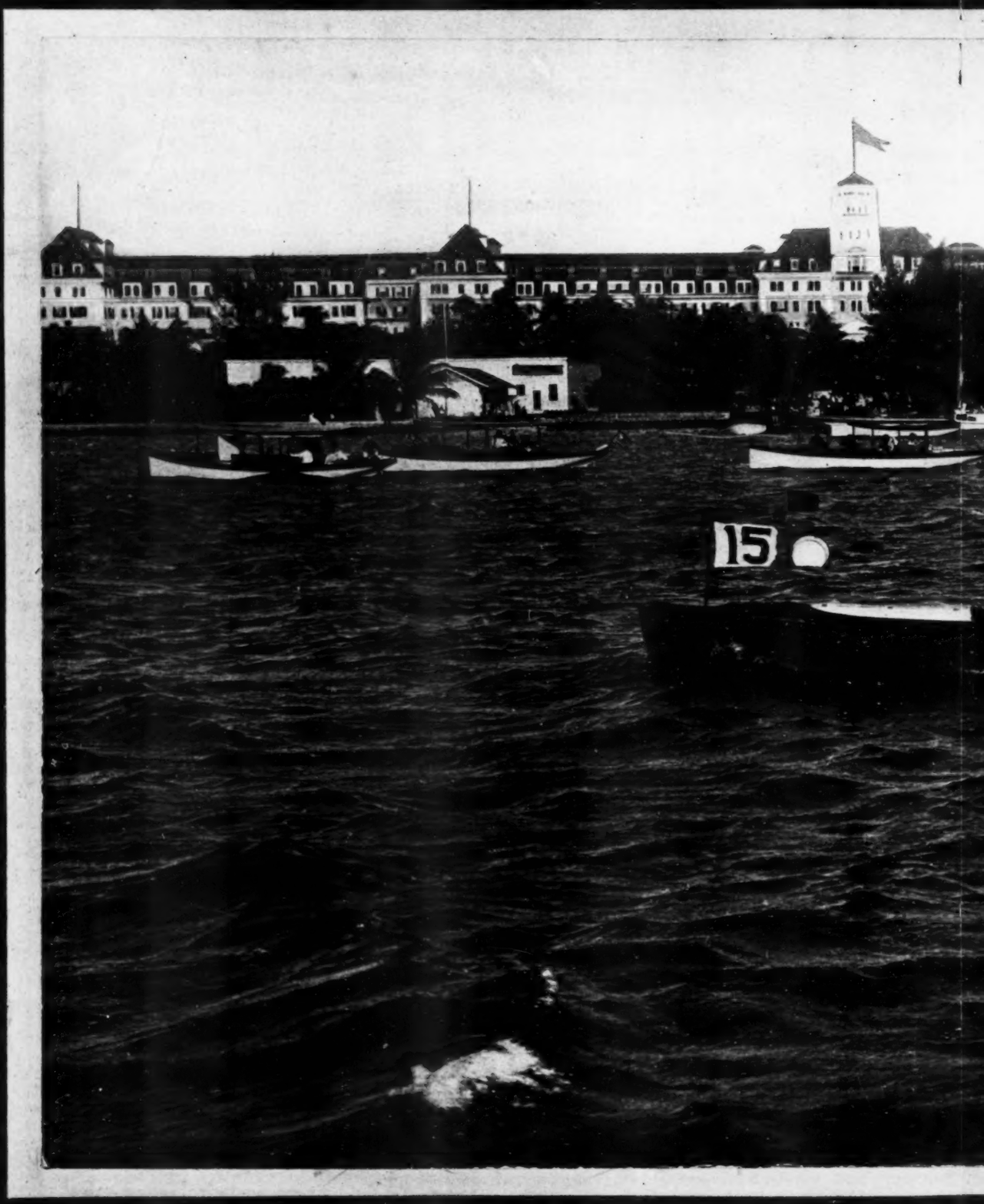
The method of handling gasoline is unique. The tanks are first filled with water, upon which the gasoline floats. With this system there can never be any gas in the tanks, as they are always either filled with gasoline or water, or a part of each. The filling and emptying of the tanks is entirely automatic; the filling and out-take pipes being so arranged that it is impossible to force any gasoline through the overflow pipe, and also impossible to draw any water over into the carbureter. This system was devised from the system used by the Hydraulic Oil Storage Company.

In appearance Monaloa is a typical steam yacht, with large smoke stack, spars, bowsprit, clipper stem and long English stern. She has proved an unusually fine sea boat.

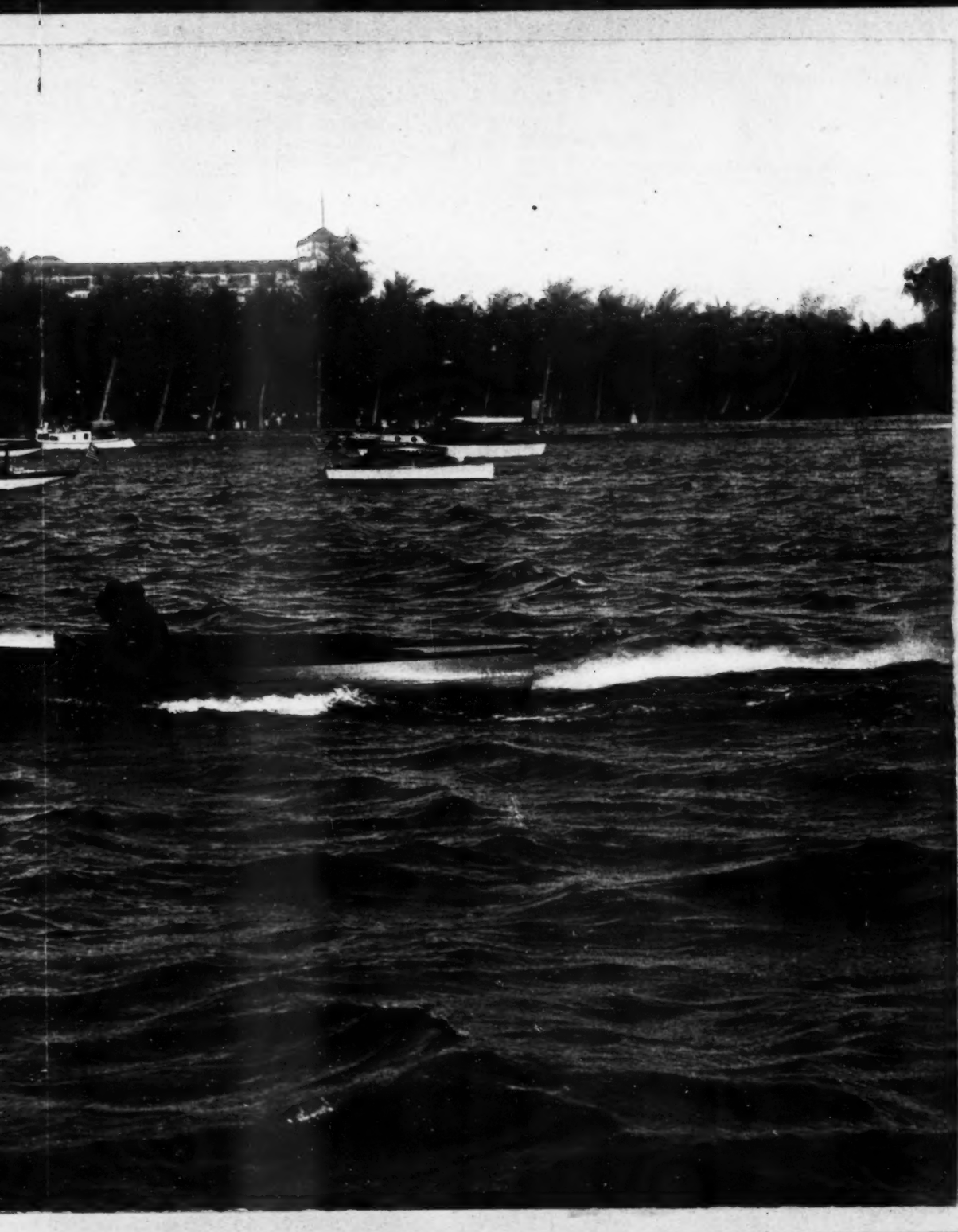


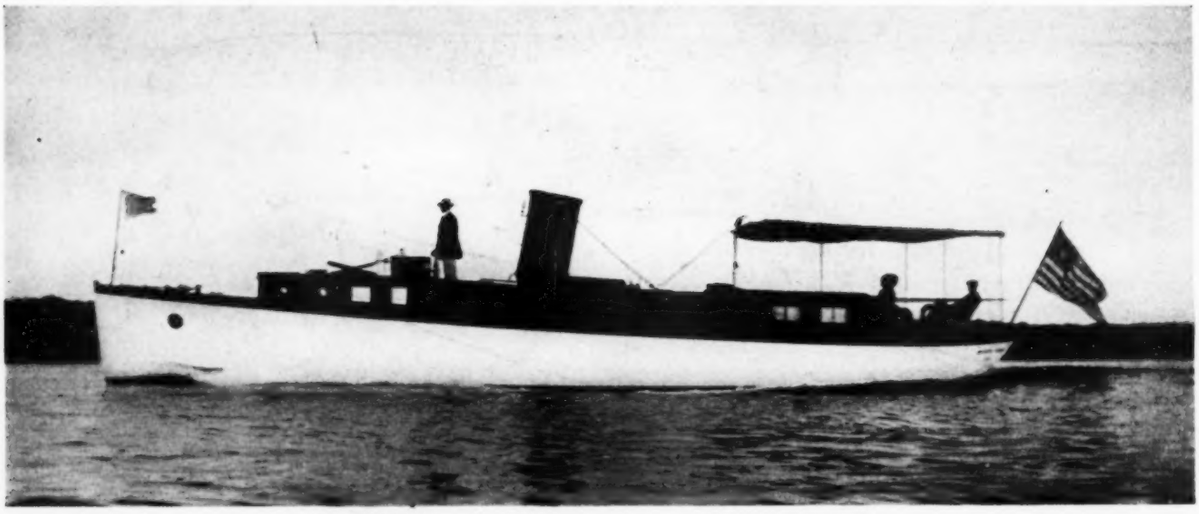
Torment as she appeared on Rendezvous Day in the annual parade from Hull to City Point.

This was the first season that a class for power boats was provided for by the Interclub Yacht Racing Association of Massachusetts Bay. The championship was won by Torment, owned by John and Thomas Burke of the South Boston Yacht Club. She is 35 feet over all, 6 feet 6 inches beam, and has a sharp bow and very narrow overhang stern. Her engine is a 4 cylinder, 4 cycle, 10 h.p. Buffalo, which gives her a speed of nine miles per hour.



MOTOR BOATING
AT PALM BEACH





Queen Mab is as pleasing in appearance as she is original in design.

Queen Mab--An Original 54-Footer.

IT would be impossible to find a more thoroughly thought out or more luxuriously appointed cruiser of her length than Queen Mab. She is the result of the experience and originality of her owner, Mr. John R. Buchan, of the New York Yacht Club, combined with the skill of Mr. Martin C. Erismann, N. A., her designer, and together they have produced a boat that possesses all the requirements for cruising in any water, combining seaworthiness with light enough draft to navigate canals or southern inland waterways and sufficient head room to ensure comfort in the tropics.

Queen Mab was built by Robert Jacob at City Island, N. Y. She is 54 feet over all and 47 feet on the waterline, with a beam of 11 feet and greatest draft of 3 feet. She was designed to accommodate four persons in addition to her crew of two, and this she does without that cramping which is often the result of attempting to accommodate too many. The quarter deck is large enough for all purposes, with a hinged seat across the after end of the cabin trunk and a round hatch cover to the lazarette which when raised serves as a table. Forward of the stack is a shallow cockpit for the helmsman; this is sheltered by a solid wind-break in front.

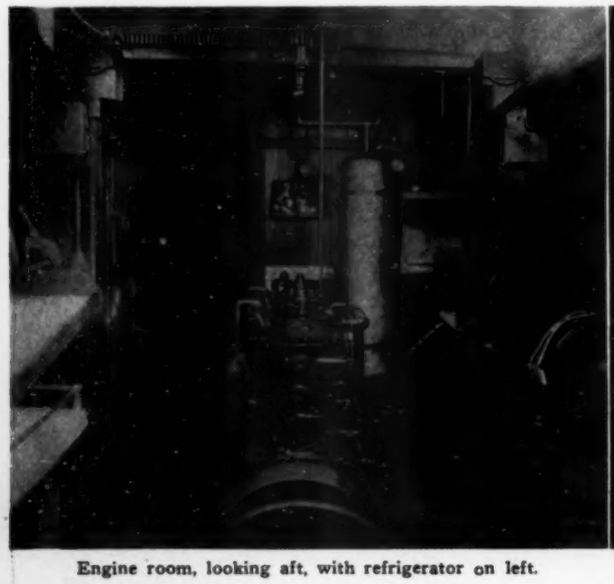
The companionway leads, by means of a slightly curved stairway, to a lobby which is provided with an open teak grating where wet oilskins may be removed and placed in either the large locker beneath the stairway or the full height locker just forward of it. Forward is the cabin, a good idea of which may be had from the accompanying illustrations. It is elegantly finished in natural teak, with mirror panels which lend to its roomy appearance. Above the charming little tiled grate is a mantel of teak, supported by teak pilasters and on the teak panel below the mantel is carved in relief the Buchan crest. Over the mantel are the clock, trim-gauge and barometer. At either side of the forward end of the cabin are small buffets, as shown in the illustrations.

The two fuel tanks have a capacity of 140 gallons each, giving a cruising radius of 700 miles, and are placed close up under the deck at either side. These tanks project 33 inches aft of the engine bulkhead, above the buffets and are finished in teak with mirror panels. The port transom is 6 feet 9 inches by 30 inches and is carried around the after bulkhead. Here is situated the permanent swing-leaf table, leaving the starboard side of the cabin clear. The starboard transom is 6 feet 6 inches long and extends from 2 feet to 2 feet 6 inches. Beneath the forward end of each transom is a long, deep drawer and under the after portions are stowage spaces for stores. Aft of the companionway is the state-room with two berths, 6 feet 6 inches by 3 feet. Over the dresser, which is between the berths at the after end of the room, is a double shelf wall closet and just above this and sheathed by its sides and the mirror, is the standard compass, which may be read from the deck through a glass plate in the cabin roof.

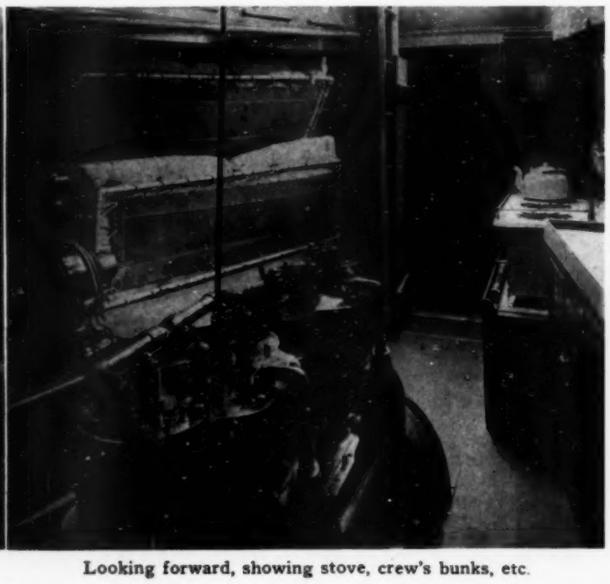
Queen Mab is driven by a 1910 model, 24-30 horsepower Twentieth Century engine, weighing 1,800 pounds, equipped with a Bosch magneto and spark plugs and capable of propelling her at a rate of something over 10 miles per hour. On the starboard side of the engine room there is an ice chest, under the fuel tank, with a capacity of 500 pounds of ice. Forward of this is a long dresser with a sink, back of which are lockers for china, culinary articles and small stores. Next forward is the four-burner stove and still further forward are another dresser and locker.

The quarters throughout are lighted by a 2 h.p. 110 volt dynamo belted to flywheel of main engine, capable of charging a storage

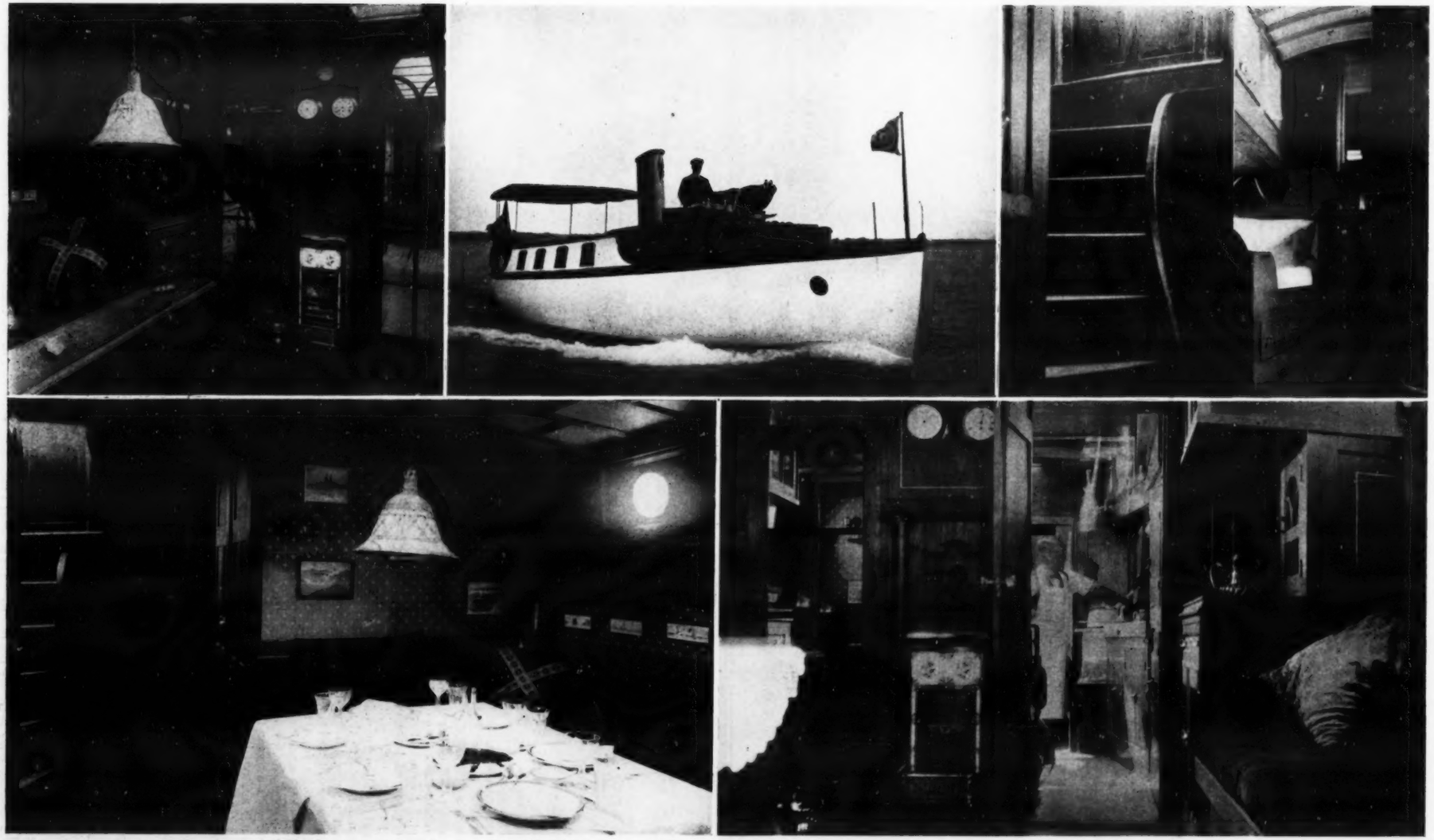
(*Continued on page 64.*)



Engine room, looking aft, with refrigerator on left.



Looking forward, showing stove, crew's bunks, etc.



Queen Mab.—Above on left, the main cabin looking forward; on right, the stateroom looking aft from companionway.—Below on left, main cabin looking aft; on right engine room and galley from main cabin.

The Prize Contest in Questions and Answers.

ONCE more we are overflowing with answers. Lots of real good ones cannot be used because we simply haven't the space. New contestants come in each month. The interest is spreading. You who have not yet tried your luck; there's a picture waiting in the office for you—and we should like to read what you have to write. Share your wisdom!

READ the general conditions again:—We will give prizes each month to those who send in the best answers to the questions printed in the issue of the month before, and in order that the department may be helpful to the greatest possible extent, we will give prizes for the best and most practical questions submitted for the next following competition. There will be three questions in the contest this month, and therefore three prizes for the answers.

For the January contest we offer $10 in cash for each of the best answers to the questions below, and $2.00 in cash for each of the best and most practical questions submitted for the next contest. Answers should not be more than 500 words long, although we do not insist on this limit if the quality of the answer merits greater length.

THE QUESTIONS FOR THE NEXT ISSUE ARE THESE:

What is the best treatment for the bottom of a salt-water cruiser?

Suggested by R. B. Powers, Green Bay, Wis.

Is it good practice to use cement in the interior of wooden hulls?

Suggested by L. Kromholz, New York City.

From what place is it best for the carbureter of an open motor boat to take its air supply?

J. B. Sadler, Norfolk, Va.

Answers addressed to the Editor of MOTOR BOATING, 2 Duane Street, New York, must be (*a*) in our hands on or before December 15th, (*b*) not over 500 words long, (*c*) written on one side of paper only, (*d*) accompanied by the senders' names and addresses. (Names will be withheld and initials or pseudonyms used if this is desired.)

Questions for the contest should reach us on or before the 15th of December.

THE PRIZES ARE:

For the best answer to each of the three questions given above, $10 in cash. (There are three prizes, one for each question, and a contestant need send in an answer to but one, if he does not care to answer all.)

For each of the suggested questions selected for use in the next contest, $2 in cash.

For all non-prize-winning answers published we will pay space rates.

To all who send in answers, prize winners excepted, we will give a reproduction (21 x 14¼ inches) in colors of Professor Schnars-Alquist's wonderful painting "Windstarke 10-11" on heavy paper, uncreased. It is a very desirable picture to have framed for the den or club room.

Answers to Questions in November Issue

What Should be Done to an Engine that is to Remain in a Boat While it is Laid Up for the Winter?

The Prize Winning Answer.

IF the engine must remain in the boat be sure that the hull is in such a position that there will be the least possible strain on it from the weight of the machinery.

Run the engine a short time after shutting off the circulating water so that all the water in the circulating system will be driven out in the form of steam and the water jacket will be hot. Disconnect all water pipings from the engine and leave open for a short time so that the hot walls will dry thoroughly. Cork up tightly all open ends in the piping which is not attached to the engine. Disconnect exhaust pipings, leaving them open for a time, and then cork up both ends.

Drain all gasoline from the tank and pipings and leave both open long enough to allow the vapor to dissipate. Cover the vent hole in the tank with surgeon's plaster. Remove the carbureter and put it away in a safe place at home after airing it thoroughly. Cork the end of the gasoline pipe where detached from the carbureter and wrap with surgeon's plaster. Remove the spark plug or low-tension igniter, and put it away at home with the carbureter.

Clean all the interior parts of the engine as thoroughly as practicable and squirt in cylinder oil with a "grease gun" so that small places will be covered with a film of oil. Plug all openings in the engine with corks which have been soaked in oil. Open the hand-holes in the crank chamber and pour in as much cylinder oil as it will hold, then replace the covers. Remove the cylinder head, if detachable, and fill cylinder with oil after cranking the engine a few times, to distribute the oil around the piston rings and in the crank chamber. Then replace the cylinder head tightly. If the cylinder head is not detachable, squirt oil in with a "grease gun," through the spark plugs or igniter hole, in different directions, so oil will be sprayed above as well as below.

The shaft and propeller should be removed and stored in a safe place. The flywheel should be removed and may be stored in a convenient shed, or in the boat itself, if the strain on the hull is taken care of.

Every exterior part of the engine should be smeared with a thin film of some heavy grease. The grease should be extra thick around and over all the corks to make them as nearly air-tight as possible.

If much oil leaks from the crank chamber, around the shaft, some vessel should be placed beneath to catch the drip. The whole engine should then be covered with a thick canvas battened to the inside of the boat all around the engine.

W. H. H., Jr., Baltimore, Md.

The Satisfaction In a Good Job.

THERE are a few things to be done to a motor that is to "winter" in the boat, and there are about a thousand and one ways of attending to the details.

One way is to fill the cylinders just before hauling out, with one of the good carbon removers on the market, carefully following the directions on the can. Then disconnect the water supply and drain the circulation system, any remaining moisture may be readily driven off in the form of steam by running the motor a short time. Any scale dirt or rust may be softened and removed by filling the water jacket with kerosene and letting it stand while removing grease cups and other things likely to "take wings" during the lay-up.

Drain off the kerosene and fill the jacket with lubricating oil. Kerosene will rust iron worse than salt water if it gets a start. Then drain the crankcase and while the old oil is running off, fill up the cylinders with oil and turn the engine over a few turns to spread the oil over the "works." Any surplus will eventually work its way down to the crankcase.

If the old enamel has started to chip off—now is the time to care for it. Spring time is too late, unless you like to remove rust. There is a paint manufactured by one of the graphite companies, a bridge paint that is proof against nearly all the things one may think of: heat, cold, acid, rust, etc. It is easily applied and dries very quickly with a hard, shiny finish. The best way to apply it is to use a brush about 2½ inches wide, being careful of brush marks.

The surface must be free from grease, this may be accomplished by washing with a strong solution of washing soda. The bright work—valve rods, bolt heads, etc.—should be covered with thick vaseline or engine grease and all openings to bearings, cylinders, etc., closed with screw or soft pine plugs. It would be better to use screw plugs in the spark plug holes as a safeguard against the "smart alecs" who like to drop foreign matter into the cylinder.

The last step is to disconnect the fuel pipe line and drain all gasoline from the tank and

pipes. Then cover the motor with a tarpaulin or sail cloth and lash securely. She will enjoy her rest and snugly as the proverbial "bug in the rug," and when the spring comes there is not much real engine work to be attended to. Perhaps a prospective purchaser may come along during the lay-up. Your engine will look as if an engineer took care of her and not a shoemaker. We all know appearances count for a lot and even though you make no sale there is a certain satisfaction in a job that is well done.

C. PETERSON, Brooklyn, N. Y.

First, a Thorough Cleaning.

WE shall assume that the boat is housed for the winter in a shed or boathouse, which is fairly waterproof.

The first thing to do is to see if there is any gasoline left in the tank, and if there is, to draw it off. Even though it would evaporate in time, if left in the tank, it is much safer to disconnect the pipe at the carbureter and drain all the gasoline from the tank and pipe.

The water should also be drawn from the cylinder head and from all the pipes which are connected with the water circulation. Be sure you get it all, as there is any amount of truth in the old adage, "It is better to be safe than sorry." Many careful men take out the spark plugs and give them a good cleansing with gasoline. If they are not left in the engine, snugly fitting wooden plugs should be turned tightly into the holes, in order to keep out the dampness.

Not only should every nut, which is used at all on the engine, be unscrewed and the rust scraped off it, but each one should be oiled and then turned up again. One should, however, be careful not to turn them up too hard.

The valves and the springs of four-cycle engine should be cleaned and then thoroughly oiled. In case either a valve or a spring looks as if it ought to be renewed, it is better to leave it with the engine and have it replaced by a new one when the boat is overhauled in the spring.

All the oil cups and grease cups need to be cleaned and refilled. It is a good thing to turn the engine over by hand, until one is sure that the oil has worked into the bearings and rings of cylinder. When the weather becomes severe, this should be done once a month, as freezing temperature makes the viscosity of oil so great that it sticks almost like glue.

Unless the shed is absolutely waterproof, it is the wisest plan to disconnect both batteries and the magneto, and leave them in the dryest place that one can find. It makes a great difference in the life of a magneto, if it is well oiled and carefully put away at the end of the season.

If an engine is painted when it is laid up for the winter, it usually needs to be repainted after it has been overhauled. But for small engines a good coat of paint put on the engine at the close of the season is money well invested.

GEORGE H. HANDS, No. Cambridge, Mass.

Ventilation Necessary.

CLOSE the sea cock if the boat is afloat and drain all the water from the water jacket around the cylinder or cylinders if more than one, if the exhaust is water jacketed be sure you drain that also, take the tops off the check valves and remove the checks, if the delivery check is in the top of the pump remove that also, disconnect the outboard connections and make sure there are no pockets in the piping that will hold water; if the connections are hose, take them off and put on new ones next season, remove the packing from the pump and make sure there is no water left in that. If the launch is out of water remove the packing from stuffing box to get the water all out of the shaft log. Cover all bright iron parts with a mixture of white lead and lard, or white lead and hard grease, drain all oil and possibly some water from the crankcase, wipe all enameled parts clean and put about ½ pint of cylinder oil in each cylinder, remove spark plugs or igniter plugs and stop the openings with a plug of cotton waste; the plugs should be carried home and kept where it is dry. After making sure you have all the water out and all bright parts covered with the lead and grease compound you are ready to cover the engine up, if in an open boat; canvas is about as good as anything, but do not cover so tightly about the engine that it cannot get any ventilation or it will sweat and rust. Give a chance for the air to circulate but do not have any openings that the snow or rain can beat into; if the engine is in a cabin leave a chance for ventilation just the same. If you use a vibrator coil, that should be taken home with the plugs to prevent rust. Dry cells will be of no use, generally, the next season, so if you have no use for them at home leave them in the boat, but if you use liquid cells it is well to keep them where it is not cold enough to freeze. While they will work in a freezing temperature, it is better to keep them warm if you wish to use them again next season.

J. W. RANKIN, Camden, Maine.

Advice Regarding Pumps.

THE most important thing in leaving the engine for the winter is to see that no water is left in the cylinder jackets or in the pump and pump fittings. The method of removing the water from the cylinder jackets varies according to the construction of the engine. In some engines it is simply necessary to open a drain cock for this purpose. In engines equipped with a centrifugal pump, the water, unless a check valve is used, will escape through the inlet pipe as soon as the boat is pulled out of the water. In plunger pumps, however, the cap should be removed from the top of the pump in order to make sure that all the water has escaped. Having removed all the water from the jackets in this manner, it is advisable to run the engine for a few moments until it becomes quite warm. This has the effect of vaporizing the water which still clings to the walls of the jacket, thus eliminating the danger of having rust formations which may at some time cause trouble in the pump.

Returning to the pump, special attention should be given to all check valves. The tops should be removed from all these, and the water removed from underneath the seats, where there is generally a small pocket. In the centrifugal pump, the water will run out of the pump, but with the plunger pumps, especially where the plunger rod is hollow, it is necessary to remove the top of the pump and remove the water by means of a rubber tube or some absorbent material. It is also important that the valve seat of the pump, since the latter is usually made of cast iron, be thoroughly dried in order to prevent pitting which will cause the pump to lose its priming when put into commission in the spring.

As a final precaution, take out the check discs of the check valves and pump (if there are any) and then replace the covers. Now disconnect the water outlet pipe at some convenient point near the cylinder and blow through it. It will then be seen whether there is any water still remaining in the cylinder.

Having expelled the water, the engine should now be turned over by hand, allowing, at the same time, a large quantity of good lubricating oil to flow into all the working parts and into the cylinder particularly. This will prevent rusting and the consequent pitting of the parts.

All bright steel parts should be covered with a thick coating of grease or tallow to ward off the attacks of rust due to moisture. Clean all old grease and oil from around the engine bed and cylinders, as this will harden in the winter and be harder to remove in the spring. Having completed these arrangements, cover the whole engine with an oilcloth or waterproof canvas. The engine should then be in fit condition to stand the trials of the winter.

C. BRUCE LANGMUIC, Toronto.

Are Twin Screws or A Single Screw the Better Equipment for a Cruiser of About 50 Feet?

The Prize Winning Answer.

THE single-screw type is preferable, but many things are to be taken into consideration in determining so important a question.

1st. Reliability.
2nd. Cost of plant and installation.
3rd. Weight of motor plant.
4th. Space occupied.
5th. Liability to accident to propellers and in motor room.
6th. Ease of operation and control.
7th. Fuel consumption.

On reliability, the ballot must be cast in favor of twin-screw type. It is always possible that a motor may run for months and then suddenly balk, but it is entirely unlikely that both will break down at once, and half speed is better than a tow.

As to all the other enumerated considerations the votes go to the single-screw type.

The cost of plant, including installation, is materially lower for a single-screw, power being equal. The labor of installation is much less; it is much easier to get a suitable bed for the motor on the center lines of hull and the single exhaust is less trouble to arrange and put in, all of which means a direct and large saving in installation cost.

Weight, also, is much less for equal power with a single motor, both the weight of the motor itself and the weight of the necessary equipment and fittings.

The space occupied by a single motor is also much less than by twin motors, and the space abreast of a single motor is available for galley or berths for crew or for other purposes. In a boat of fair beam this space is a matter of real importance, as in addition to bench, lockers for tools, batteries, etc., there is a large amount of valuable space saved which is practically unavailable if twin motors are used.

Danger of accident is materially less in the single-screw type both as regards accident to the propellers and accidents in the motor room. The propellers are necessarily so located in the twin-screw type as to be particularly liable to accident from drift-wood, an ever present risk and one which it is of importance to minimize as far as possible. The single-screw, protected as it is by a heavy skeg, is much less exposed to this danger from drift-wood and sunken obstructions.

In the motor room, also, the single motor is safer; there is less machinery to stumble over and less moving parts to avoid, and in a seagoing boat this is important. There is one other point. It is customary now-a-days to carry two fuel tanks and if twin motors are used there results a complicated system of fuel supply pipes which necessarily increases the danger of leakage, breaks, etc., as compared with the simpler system for a single motor.

In operation the single motor is simpler and, therefore, preferable, especially if controls are carried to both bridge and pilot house. It may be that twin-screws make possible certain evolutions, short turns, etc., but this would seem to be of slight importance in the total general convenience of control of a single motor.

As to fuel I assume that it is admitted that a 50 h.p. motor will not consume anywhere near the gasoline used by two 25 h.p. motors to do the same work, and although the cost of fuel is, relatively a small item of expense, the saving of fuel counts as a small make-weight in favor of a single motor.

Generally speaking, therefore, it would seem that the single motor is preferable. In special

cases it may will be that some special restriction would make the twin-screw type necessary, as, for instance, if the absolute extreme of light draft were a factor of controlling importance because of lack of water in the home port. In such a case, of course, other considerations, however important, must be waived, but for a sea-going cruiser, broadly, there seems to be no doubt that the single-screw type is better, and this view is confirmed by the growing possibilities in the use of gas producer plants, as the motor room of almost any normal sea-going cruiser having a single motor would permit the installation of a producer plant without extensive alteration or enlargement.

"HUNTINGTON," New York.

Depends On What the Boat Is Used For.

THE choice of single or twin-screws for a cruiser of about fifty feet length depends, if the question of first cost is eliminated, entirely on the use for which the yacht is intended and the waters in which she will be navigated.

For off shore cruising the single-screw appears to be the favorite and the following advantages which it possesses are probably the reasons for its almost universal use in yachts built for that purpose.

The greater draft and size of a single-screw, give it better immersion and driving power in rough water, and there is less liability of the motor's racing.

For off shore cruising where any mishap to the wheel would be dangerous, the protection afforded the propeller by the skeg and shoe is an advantage, as there is less danger by fouling drifting obstructions, or from stranding, than with the exposed twin-screws on each side of the hull. A well designed single-screw is also supposed to be slightly more efficient than twin-screws of the same power.

Another point which must not be overlooked is the amount of space around the motor, as in many modern craft the engine room is decidedly more engine than room. A gasoline engine when balky is troublesome enough, and when the engineer is forced to stand on his head with his feet sticking out of the hatch, in order to get at some bolt or nut, in an engine room crowded with two motors, where there is really only room for one, he is liable to be unable to see the advantages claimed for twin-screws.

For use along the South Atlantic and Gulf coast and in shallow water anywhere, twin-screws have the advantage and are coming into more general use. The light draft and ease of manœuvering a yacht equipped with twin-screws, outweigh all objections that hold good in off shore and deep sea work. In the narrow creeks and channels, that constitute the inside route to Florida, every inch of draft is an inch of trouble, and in the crooked places the ease in turning with twin-screws more than make up for the additional complications caused by two engines.

The claim that in case of a break down of one motor a boat having twin-screws can make port with the other motor is true in a measure, and under favorable conditions it can be done without much trouble, but with a beam wind on the wrong side, or rough water or a crooked channel, the helmsman will be a candidate for a rest cure by the time he arrives.

No absolute answer that will apply in all cases can be given, each owner deciding after considering the advantages and drawbacks of each style as they apply to the local conditions and the prospective cruise, and if the foregoing proves of any assistance it will have served the purpose for which it was written.

PORTER G. PIERPONT, Savannah, Ga.

What is the Best System of Disposing of Bilge Water in Small Launches?

The Prize Winning Answer.

MY idea of the best way to dispose of bilge water in small launches is to have limbers or channels cut in the bottom of the floor timbers, and ribs if they pass all the way across the keel to allow all the water to run easily to the lowest point, and not settle in different pockets. At the lowest point insert an ordinary pipe, or hose, having first covered the end with a fine copper wire screen to avoid clogging. If pipe is used a common 90-degree elbow may terminate the end and the screen can be simply wired to it. This scheme is advantageous as it allows the opening to come close to the bottom boards which permits the greater amount of water to be removed. The hose, however, will serve every purpose, and can be covered with the screen and will be easier to bend into position. Bring the pipe or hose across the bottom, under the flooring, to the side of the boat in any convenient place. Fasten in a vertical position, any style of small pump (say 1 inch in diameter) just leaving room between the side of boat and pump, so handle can be moved up and down. The discharge from pump can be conducted by means of hose or pipe, laid close to the side of the boat, and passed through the planking at any convenient point sufficiently above the waterline. The instant accessibility of this system is one of its great advantages. The pump can be operated at any time without lifting the floor coverings, or disturbing the occupants in any way. When the ordinary hand bilge is employed, it must first be dug out from some hidden spot, then its rubber hose is placed over the side and the operator gets busy working the handle; ten chances to one the contrary nozzle will work itself inboard, and distribute a full stream over someone—most likely the guest of honor—and this spray can in no wise be likened to the attar of roses.

WM. WAINWRIGHT, Montrose, N. Y.

Principally On Pumps.

IF one wants to keep the boat entirely free from bilge water the first step is to have a free passage from one end to the other for the water to flow, some attain this by good-sized limbers under the timbers with a chain run through and enough slack so as to be able to haul it back and forth to keep them clear while others fill the bottom of the boat level with the tops of the floor timbers with "Portland cement." Either way is very satisfactory when well done.

When the boat is afloat locate the place where the water is the deepest, i. e., the lowest place, here is where you want your pump suction pipe to draw from, if you have used cement leave the space between this set of timbers free to form a well room. The kind of pump to be used is governed by the style of boat. For a launch with a fairly wide deck around the cockpit a brass pump set flush with the deck and covered with a screw deck plate is handy and keeps all the dirty water out of the cockpit, while in a small open launch a hand pump with about five or six feet of delivery hose that can be put away in a locker is all right and in a cabin launch where one has a little spare room near the flywheel there are several small rotary pumps operated by a friction pulley that will do the work and do it with no labor or dirt whatever. There are a few patent bilge pumps that are operated by the speed of the boat creating a partial vacuum behind a metal connection placed on the outside of the hull that are all right for high speed but are useless when laying idle.

There are also some engines that have two pumps, one for cooling water and one for the bilge, which is all right but I do not consider it very good practice to connect the cooling water pump up to pump out the bilge because of the amount of dirt and grease that is bound to find its way into the water jacket and stay there. Whatever kind of pump you use if it is fastened to the hull be sure you have a good-sized fine mesh brass strainer and that you can get at it to clean it out and have your delivery pipe come out at about the waterline so as not to discolor the side of the hull.

J. W. RANKIN, Camden, Maine.

Best, Cheapest and Easiest To Maintain.

THE best system is the one which is the cheapest to install, the cheapest to maintain, the one causing the least amount of attention and worry and giving the best all around satisfaction.

For small launches, these ideals are best realized in utilizing the circulating pump for the water jacketed cylinders by inserting a three-way cock in the suction pipe with one branch leading outside the hull in the usual way and the other leading back to the lowest part of the hull inside, terminating in a brass screen of ample size and convenient to get at should cotton waste or other refuse or dirt tend to clog it. To supplement this, or when engine is not running, a sort of squirt pump made of seamless brass tubing about 1½ inch in diameter and 20 inches long with packed plunger and convenient handle also with lower end terminating in a one-quarter inch tube about 2 inches long will be found to meet all the requirements; this stows away nicely, although there are more elaborate pumps on the market with check valves and five or six feet of hose attached that require much more space in which to stow away when not in use, and in small launches want of stowage space is most severely felt. For launches larger than 16 or 18 feet (usually designated by the term "small launches"), a separate pump attached to the propeller shaft and easily disengaged therefrom is almost a necessity, as the jacket circulating pump is not large enough to take care of any considerable amount of bilge water which a craft of this size often has to contend with.

H. J. TAYLOR, Milwaukee, Wis.

Advocates Automatic Bilge Drainers.

THERE are several ways of disposing of the bilge water. Probably the most laborious and least satisfactory one is in using a hand pump.

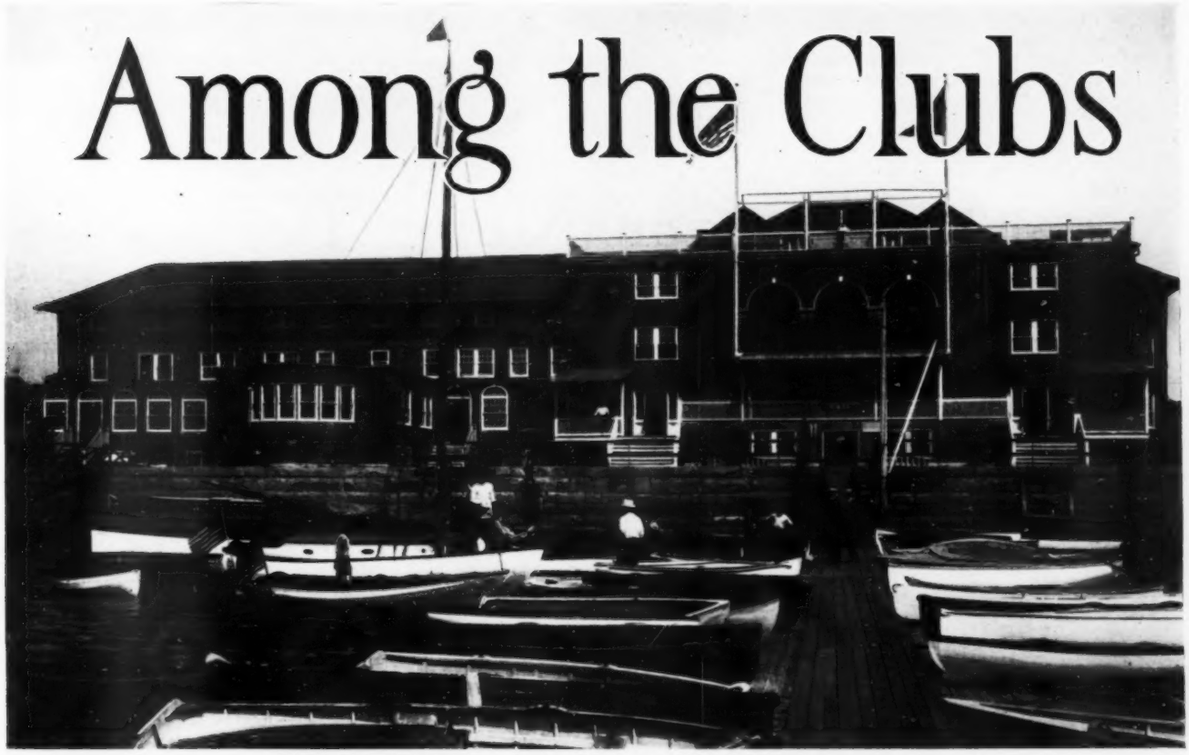
The sea cock, which is of course connected with the pump, may be fitted with a tap and connection so that the pump on the water cooling system may be used to pump out the bilge water. With this method all water must be strained through a fine screen before being sucked into the pump, otherwise some pieces of wood, or other matter found in the bottom of a boat might be pulled in and break the pump or clog the water jackets or piping which would result in rather serious damage. Even with a strainer this method is not entirely satisfactory, for the oil and dirt which is always found in bilge water should not run through the water jackets of the engine.

Some motor manufacturers attach a separate pump to the engine which is usually driven from the shaft and is a very satisfactory manner of disposing of the water. A rotary pump may be installed and driven from the flywheel.

A method, which, in my opinion, is by far the best, involves the use of the new suction bilge drainers, which are fitted into the bottom planking of the hull, at the lowest point where all the bilge water collects. They do not weigh over a pound or so and are suitable for all small boats. These pumps only act while the boat is running. A small scoop reversed, being fitted to the outside of the bottom planking furnishes sufficient suction when the boat is running to drain the bilge. There are two varieties of these pumps, one which requires closing when the boat stops; the other is automatic in action, as a rubber ball floats up and closes the opening as soon as the motor is stopped.

E. J. F. WILLIAMS, Brockville, Ont.

Among the Clubs



House of the South Boston Yacht Club at City Point, South Boston, Mass.

Baltimore Motor Yacht Club, Baltimore, Md.—At the annual meeting of the club on November 17 two new offices were added to the club's roll—president and vice-president. W. F. Broening was elected to the first position, and G. M. Armor to the vice-presidency. C. M. Slagle was re-elected commodore. The other officers elected were as follows: vice-commodore, George H. Kenney; rear commodore, J. H. Robinette; secretary, R. G. Broome; treasurer, William Hellbach. Members were elected to the Board of Governors as follows: one-year term, John Kahl, Albert Gross; two-year term, C. A. Euker, John Hederman; three-year term, Dr. E. S. Linthicum, Dr. Robert W. Price. No successor has been announced to D. Meredith Reese, Jr., who resigned the fleet captaincy.

Jacksonville Power Boat Club, Jacksonville, Fla.—The annual meeting for election of officers was held November 16, and the balloting resulted as follows: Commodore, W. F. Coachman; vice-commodore, W. M. Toomer; rear commodore, George H. Richards; secretary and treasurer, L. A. Mitchell; fleet captain, Charles A. Clark; fleet surgeon, Dr. R. C. Turk; fleet chaplain, Rev. M. C. Stryker. Regatta committee: Myron Howard, chairman; Rev. M. C. Stryker, C. E. Sheppard, C. S. Kenyon, S. B. Hubbard, Jr., and the fleet captain, Charles A. Clark.

Maumee River Yacht Club, Toledo, Ohio.—All the flag officers and the secretaries were re-elected for another year by the annual meeting of the club. The officers are: Commodore, N. S. Larsen; vice-commodore, Phil W. Spenker; rear commodore, Frank H. Butler; recording secretary, George M. McInnes; financial secretary, A. R. Perry. R. M. Starr was elected delegate to the Inter-Lake Yachting Association, and George M. McInnes alternate. Under the new rules Commodore Larsen will appoint the fleet captain, sail and motor boat regatta committees, entertainment and house committees. The motor boat Falcon will carry the flag of the vice-commodore, and the motor boat Inez that of the rear commodore. The "re-installation" of the officers will be held December 7.

A Club Floating Drydock.—The Independent Launch Club of Wheeling, W. Va., has found a new way to provide facilities for repairs to the boats of its members. A large barge has been purchased which is being fitted up as a floating drydock, with a powerful derrick for lifting the motor boats bodily out of the water for repairs. The floating derrick is also being used by the club in the work of clearing their section of the Ohio River of snags and dangerous obstructions.

Motor Boat Club of Ithaca, Ithaca, N. Y.—At the annual meeting of the club held recently the election of officers resulted as follows: Commodore, Arthur N. Gibb, re-elected; vice-commodore, John A. Duff, re-elected; secretary, Edwin S. Gillette; treasurer, John A. Duff, re-elected; measurer, George B. Howell. Commodore Gibb named as his racing committee, with George B. Howell as chairman, ex-Commodore Edward E. Ingalls, Charles C. Houghton and William O. Kerr. Cups were presented to the winners in the past season's series of races.

Earle A Goodenow's "Arrow" on Gull Lake, Mich. A 25-footer with 12 h. p. Ferro, capable of 18 m.p.h. Built by Inland Lakes Boat Co., Lake Geneva, Wis.

A New Florida Club.—A yacht club has just been organized at St. Petersburg, Fla., on Tampa Bay. Besides conducting races, the club will have as its objects to push improvements on the waterfront and to protect boat owners from depredations by bay pirates who evince an unwarranted fondness for tools, batteries, etc. The annual meetings have been set for April. The following officers have been elected to hold office until April: Commodore, Dr. M. H. Axline; vice-commodore, W. H. Jones; measurer, George Presstman; secretary, W. L. Straub; treasurer, Tracy Lewis. Directors numbering seven were elected. They include the three first named officials and the following: George Weller, E. T. Lewis, W. R. Howard and W. H. English.

Keansburg Yacht Club, Keansburg, N. J.—This is a new club just organized by the motor boatmen and yachtsmen who sojourn at Keansburg. The officers elected are: Commodore, Captain Harry Seeley; vice-commodore, T. C. Owens; rear commodore, C. Montenot; secretary, John Freschi; treasurer, R. S. Gulden; corresponding secretary, Chester Truex. The club is planning to erect a large clubhouse for use next summer and will hold a series of sailing and motor boat races.

Sandusky Motor Boat Association, Sandusky, Ohio.—This association has just been formed to promote the interests of motor boating at Sandusky. Races will be conducted in the summer, and money has been appropriated to dredge the channel in the cove and the effort will be made to provide an ideal harbor for motor boats. Andrew Knerr was elected president of the organization, and the other officers are: Edward Miller, vice-president; Robert Wagar, secretary; and Herman Kugel, treasurer.

Albany Yacht Club's New House.—The Albany Yacht Club, Albany, N. Y., is planning to build a new clubhouse, and the city will be asked to lease to the club enough space on the pier to serve as a site for the house. It is planned to erect a building costing $15,000.

Fig. 1.

Fig. 6.

Moorings for Motor Boats.

By W. E. Partridge.

THE disposal of a motor boat when not in use is a serious question, especially to the owner who is not much of a sailor. On lakes where the daily changes of level are measured by inches one may build a house over the water, float his boat into it and when the door is shut his troubles are over. When pleasure boats were light, before the days of the motor, ways were sometimes laid down and by means of a purchase the boat, when not in use, was taken out of the water. The motor and the greater size of the boats has changed all that. On tidal waters and in rivers with a swift current, conditions become difficult. And on the coast where the tide has 12 to 20 feet of rise and fall it is often necessary to have the boat in deep water where she will be available at all times.

Fig. 2.

With a gently sloping shore and a 5-foot tide one often prefers to go sailing when the tide "serves" rather than brave the long trip over the mud to the water.

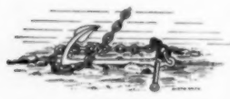


Fig. 3.

One not familiar with tides, leaving the wharf with the boat's gunwale level with the string piece and returning six hours later to find the same wharf towering 15 or 20 feet above, would be not a little startled. How to secure a boat so that it may be reached at all times with safety and comfort under such trying conditions is, to the novice at least, a great puzzle. It is not particularly easy even when the tide rises but 4 or 5 feet as in New York Harbor.

In tidal rivers mooring alongside of a dock is only now and then practicable and the method largely adopted when conditions make it possible is shown in Figure 6. The boat is fastened between two stakes, or piles, made fast bow and stern with each line long enough to accommodate the rise and fall of the tide. The stakes are placed so that the boat is always lengthwise to the current and does not have to swing as the tide turns. Figure 1 shows a modification of the same plan. The mooring lines are attached to floats. These are made of thin pieces of wood forming a triangle about the stake. As these will rise and fall with the tide the ropes do not have to be left slack.

Fig. 4.

Another form of this device, or more correctly a modification of it, is shown in Figure 11. A stake is planted at a distance from the wharf or landing and in such a position that the boat will lie "fore and aft" to the current. To the stake is fastened a single block. Through this block is rove a line with a weight at one end and an eye at the other. The eye is put over a cleat in the stern of the boat and the painter taken to the dock or landing and made fast. The weight keeps everything taut and holds the boat securely.

In Figure 17 another modification of this form is shown and a very neat one. A stake is driven at a convenient distance from the dock, landing or shore. It carries a pulley with a rope rove through it. At the outer end the rope has a snap hook, or an eye. On making a landing the snap hook is made fast at the stern. The boat then goes ashore, the painter is made fast and the boat is hauled out by the mooring line.

When there is a steep bank and deep water at low tide close in shore there is an odd form of mooring that seems well adapted to tidal rivers. It is a sort of horizontal well sweep. This is illustrated in Figure 23. A long pole of sufficient strength is pivoted on a short stake. At the outer end, or the long end, the boat is fastened. It is only necessary to swing the pole out at right angles to the shore or wharf to bring the boat out to a mooring. The short end of the sweep is made fast by a rope to a properly arranged cleat. Enough slack is allowed in the painter and the fastening at the inner end of the sweep to permit the boat to rise and fall with the tide. This makes a very convenient mooring, calling for but one line in the boat and allowing her to swing to both wind and tide. She can also be brought to the float with great ease. This mooring has the great advantage that the ice cannot disturb it. In rivers spring freshets always bring down cakes of ice in Northern rivers, destroying most moorings, pulling up stakes and working general destruction.

In ocean harbors where are encountered the rise and fall of the tide, the wind, at times a heavy swell and perhaps drifting ice, greater strength is needed in all things connected with making a boat fast. It is also necessary to consider that all wood work placed under sea water will be attacked by the teredo (Teredo Navalis) and ultimately destroyed. In Southern waters their ravages are far worse than in the latitude of New York or farther North, but destruction is certain, even with creosoted wood, in time. On Long Island Sound a popular form of moorings (Figure 22) is made by driving a stake in deep water on which is fastened a single block high above high tide. Through this block a line is rove. It is made long enough for both ends to reach shore. The block must be high enough so that the boat does not foul either of the lines in swinging. A cleat on shore is used to make the hauling line fast. This is possibly the most generally used form of mooring to be found in the harbors south of Cape Cod.

Fig. 7.

On shores which have a very gentle slope, or in places where is a great rise and fall of the tide it is usually best to use some sort of an anchor for a mooring and so keep the boat afloat all the while, though in the eastern part of Maine and in the Provinces boats of all kinds are expected to lie on the bottom during some hours at low water. In most of these harbors it is out of the question to keep a small boat all the time in deep water.

An ordinary anchor does not make a good mooring. As a boat swings to the wind the chain is usually fouled on the fluke that projects from the mud (see Figure 3) and in this way is often broken out of the ground, when its holding power is, of course, destroyed.

Fig. 8.

Probably the best anchor for a mooring is some form of mushroom. (See Figure 2.) The weight of the mushroom is large, it has a good hold upon the bottom and its shape is such that it cannot foul the mooring chain.

A mushroom anchor imbeds itself in the mud and "holds" better than any other known form of anchor. It has several forms or modifications.

Flat stones, or those of a shape that are not easily dragged along the bottom are much used. A hole is drilled through them and a ring bolt with a nut and washer put through. Figure 4 shows a stone of this kind. Anything with a flat base through which, or into which a bolt can be fastened will answer. Of course, a swivel is needed to prevent the chain from being badly twisted.

Fig. 9.

Cement, sand and scrap iron can be made into a very satisfactory anchor. The cement and sand are mixed in the usual way and poured into a box filled with scrap iron. When the box is oblong two bolts are used with a

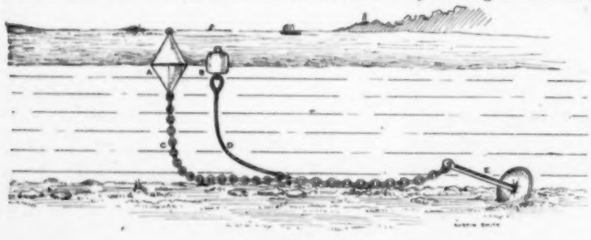


Fig. 5.

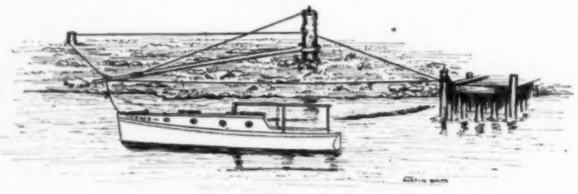


Fig. 10.

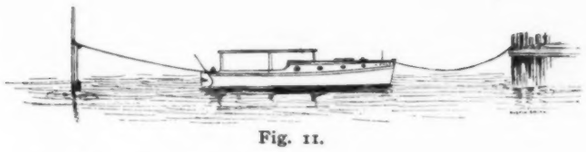


Fig. 11.

Fig. 17.

span of chain between. If scrap iron is not at hand the weight can be made up with stones. The arrangement may be seen in Figure 7.

When one is situated near car shops, an excellent anchor can be made from an old car wheel. A regular 33-inch steam road wheel is admirable for the purpose. Even on a smooth, hard bottom a wheel from its great weight answers even for a boat of considerable size. In Figure 8 is shown a wheel with a bolt and eye through the central hole. Spoke wheels give easy means for fastening the chain and plate wheels usually have holes through the plates, so that it is an easy matter to attach the chain even when the central hole is not available. A central pull, however, is always desirable.

Fig. 12.

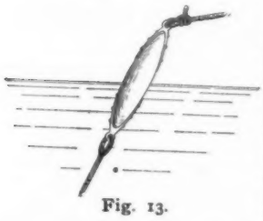


Fig. 13.

With an anchor on the bottom and a proper chain or rope secured to it, a buoy is needed in order to pick up the mooring. A chain commonly lies on the bottom and the buoy is attached to it by a rope. For moderate sized boats there is only a short length of chain and then a rope large enough to form the mooring attached to the buoy. Buoys or floats of wood are common and cheap. The flat float has the advantage of a space on which a name can be carved or painted (Figure 9), while a bit of rounded wood or spar (Figure 12) has the advantage of round corners.

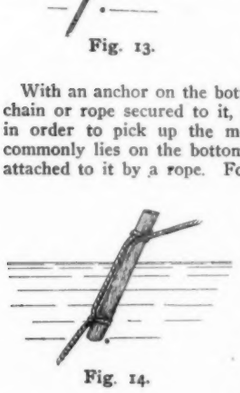


Fig. 14.

Spar buoys are of various kinds and can be made to ride well out of water, which is an advantage. In Figure 13 a spar buoy has a strap of iron at each end and eyes in each strap. Into the lower one the rope, which is swiveled to the chain, is eye-spliced. Into the other goes another rope. In Figure 14 the spar is fastened to the anchor rope with two half hitches. Another form of spar buoy has the lower end weighted so that it floats

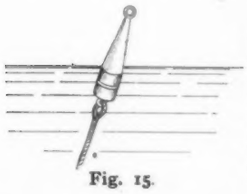


Fig. 15.

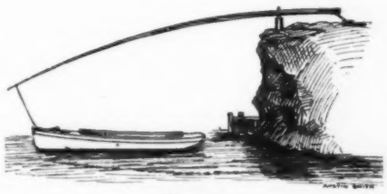


Fig. 23.

nearly upright. Below it has a ring for the anchor rope and above a large ring which comes level with the boat's deck. (See Figure 15.) A cask with rope straps is often used, as in Figure 18. The cask should be painted and have metal hoops. It is good till it begins to leak, but it is fond of biting out bits of paint, which is also true of the can buoy. (Figure 19.) A cork buoy (Figure 20) is made up of square sheets of cork cut of such sizes as to make the shape shown. It is rather costly and not very pretty. A more satisfactory method is to put the cork in a bag (Figure 21). This is made water-tight and has a tube through the center to take a rod which carries a large ring at the top and a swivel at the bottom. The larger ring enables the buoy to be easily picked up. Into the swivel at the bottom the pick-up rope is fastened with a snap hook. The canvas buoy has the advantage over the other kinds in that it does not mar the paint and varnish, nor bite out bits of wood whenever it strikes a corner.

There are several forms of mooring particularly adapted to still water, or sheltered harbors. For example a modification of Figure 11 is shown in Figure 17. A post is set in the water far enough from shore or dock to allow the boat to lie safely. On the post a block is fastened, through which a line is rove from shore. In the outer end is worked a Matthew Walker knot to keep the line from running through the block and outside of that is a snap hook or an eye splice. On coming in, run alongside the post and snap the hook into a ring at the stern or pass the eye over a cleat. Then go ashore and after making the painter fast, pull the boat out till she lies at proper distance from the two mooring points. This is a very secure arrangement and is much liked by those who have used it.

Figure 10 shows a form of mooring which the author has often used with good results. Against a post on shore a long spar is fastened with a clove hitch so that it can swing freely. A heavy wire, or a line, holds the outer end up above the water. On the other side of the post is set another post to hold a guy rope, which runs from the end of the spar to the charter post and thence to a cleat on the dock. Another guy goes directly to the dock. Paying out one and hauling in on the other brings the end of the spar to the dock. The painter is made fast to the outer end, the spar swung out, the guys made fast and the boat is secure. A pulley may be used at the small post.

Fig. 18.

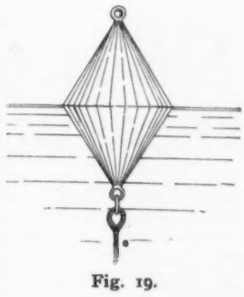


Fig. 19.

The general arrangement of a deep water mooring with a can or canvas buoy is shown in Figure 5. Either the pick-up rope or chain is used. Chain is attached to the anchor to prevent the friction on the ground or rocks from cutting the cable.

Where a number of boats have to be kept together side by side, as in a livery, one end of each boat fastened to a rope and the other end to a dock, as shown in Figure 17, is convenient. A pulley is fastened to the line, and the painter secured to the dock, as shown. This plan takes a little more rope but it saves an immense amount of wear and tear. In fact a boat can be brought up to the dock without it being necessary to step into her.

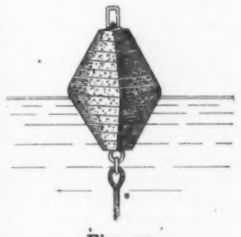


Fig. 20.

Fig. 21.

While on the subject of moorings it might be well to point out that there is a right way and a wrong way to fasten a rope or hawser to an anchor ring. This fastening every motor boatman should be able to make, but there are many who make an awkward job of it.

(*Continued on page 62.*)

Fig. 24.

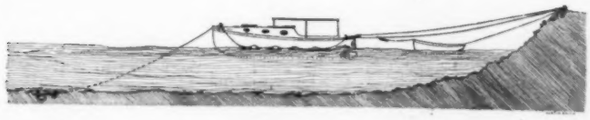


Fig. 16.

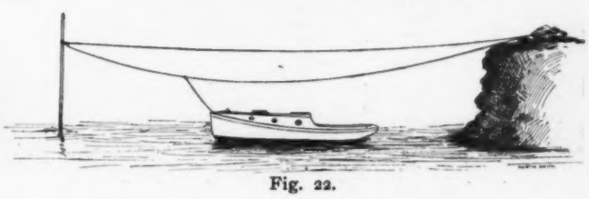


Fig. 22.

Bronzewing, an Australian triple screw 120-footer.

Developments in Motor Boating Abroad.

An Australian Motor Yacht with Triple Screws.

ONE of the largest and most luxuriously furnished motor yachts ever built is the Bronzewing, which was built in Sydney, Australia, to the order of Mr. S. Hordern, a prominent yachtsman of that city. She is intended for cruising on the inland waterways of the Australian continent and also for journeys to the South Sea Islands, for which she is amply seaworthy. She is about 120 feet long and has a beam of 17 ft. 6 in. The hull is of teak wood, and was built under the direction of Mr. Walter Weeks, a Sydney architect.

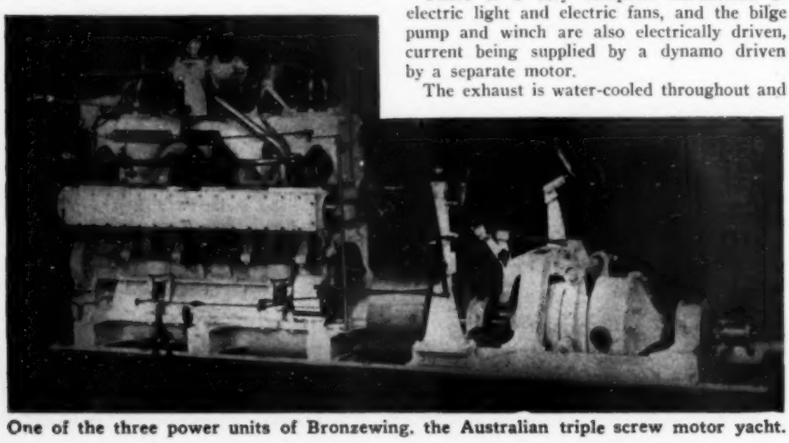
The most notable feature about this craft is that she is fitted with three sets of Thornycroft 100 brake horsepower kerosene motors driving triple screws through reversing clutches. The object of providing triple screws for a yacht that travels at cruising speed a good deal of the time is to effect economy of fuel, as the center engine—or, if desired, the two wing engines—can be run at full capacity while the other engine or engines stand idle. This insures greater economy than if single or twin engines are used and throttled down below their full capacity for cruising.

The engines in the Bronzewing develop their full power at about 750 r.p.m. Each engine has four 8 x 8 inch cylinders, cast in pairs, with large openings for inspection and cleaning. Lubrication is forced to all the bearings by pump. The fuel used is kerosene. Compressed air is used for starting the motors. It is supplied by a Thornycroft 6 h.p. motor and compressor. This renders the whole plant as easily controllable as a steam engine while possessing the inherent advantages of the internal combustion engine. The report published in an American yachting publication to the effect that the triple-engine arrangement of this boat had not proved a conspicuous success and that the center engine had been removed, is emphatically denied by the builders of the engine and is also contradicted by the owner of the yacht, who states that the engine is still in its original place and capably doing its work.

There is a very complete installation of electric light and electric fans, and the bilge pump and winch are also electrically driven, current being supplied by a dynamo driven by a separate motor.

The exhaust is water-cooled throughout and is discharged at the stern above the water line.

The cabin has very complete accommodations, and is beautifully decorated and upholstered. As will be seen in the illustration, there is a promenade deck and provision for a canopy over the entire boat. To permit of passing under low bridges without delay when cruising in inland waters, the masts are hinged to fold down.

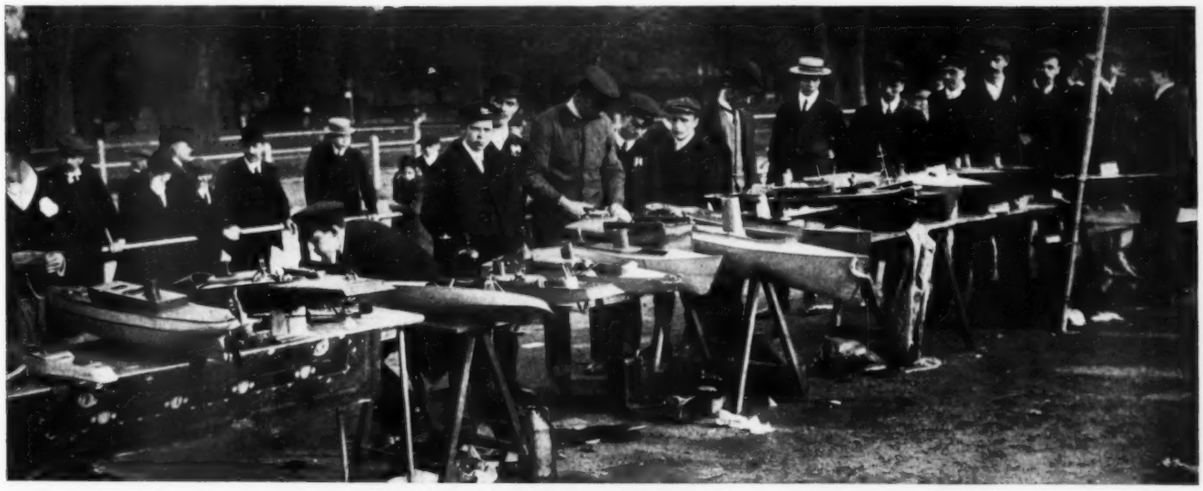


One of the three power units of Bronzewing, the Australian triple screw motor yacht.

Yum-Yum, an English steamer which was converted to gasoline.

Yum-Yum, An English Craft.

THERE is a growing tendency among the owners of the smaller sized steam yachts to replace their steam power plants with gasoline engines. The Yum Yum owned by Mr. Claude Grahame-White is a notable example of this class. She is 60 feet over all with beam of 8 feet and draught of 3 feet 6 inches to 4 feet, and is constructed of steel throughout. Originally she was driven by triple expansion steam engine, but in place of this a four-cylinder motor of 135 h.p., has been installed, which drives her at a speed of from 11 to 12 knots per hour. She has a cockpit seating six persons, a large saloon aft capable of sleeping four persons, a big engine room, lavatory, pantry, etc. In addition to the cockpit, the deck over the main cabin is railed about, and provides a large seating capacity for pleasant-weather trips. A steering wheel and engine controls are installed on the bridge deck. There is accommodation in the forecastle for the crew with two cots. Already the yacht has made several lengthy trips and has been found seaworthy and in every way as satisfactory as when equipped with the old power plant.



The models on exhibition at Clapham before the races.

Model Racing in England.

THE building and racing of model motor boats has been developed to a remarkable extent in England and in France as well. Special clubs and associations have been formed among followers of the pastime and trophies are offered annually for races. Our photographs were taken at the recent model meet at Clapham, England. About three to four thousand spectators witnessed the series of contests between model gasoline, electric and steam-driven craft. The races followed a two days' exhibition, both of which undoubtedly proved a great success. The number of boats entered greatly exceeded that of previous years. Among the craft worthy of special interest was Folly, a steam-engined hydroplane. She planed beautifully, and is very fast. Her machinery is fitted aft the step. The only other hydroplane that raced was Lusus, a gasoline-engined boat. She did not plane properly, owing probably to the fact that her engine was too far forward. The problem of the combination of engine weights and hull has yet to be solved by many of the competitors, some of the craft being down by the bows, others by the stern. But on the whole the results are most creditable. Owing to the presence of paper, string, etc., stirred up from the bottom of the pond, a number of the boats suffered from fouled propellers and choked water pipes. Difficulty was also experienced in catching the boats owing to their speed.

Starting a gasoline model.

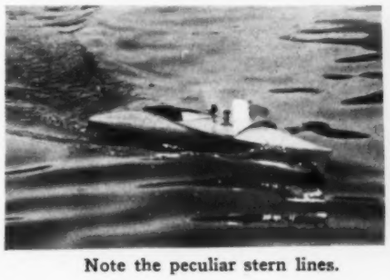
Lusus, a gasoline hydroplane.

A Motor Cargo and Tow Boat for Peru.

AT Chiswick recently the motor cargo and tow-boat Paytena was tried out by representatives of the Peruvian corporation for which she was designed and engined by Messrs. J. I. Thornycroft & Co., Ltd. She will be placed in service in Peru.

Paytena is 45 ft. in length overall, with a waterline length of 40 ft. Her beam is 8 ft. and the draught is 4 ft. 6 in. Specially designed to be a healthy sea-boat, as is required under the rather arduous conditions of the west coast of South America, the hull is strongly built of very thick English elm. The freeboard is higher than is usually the case with vessels of her length. Large towing bitts and heavy deck beams have been built into the hull. Below the waterline the planking is protected by copper sheathing, as the waters in which she will work have a deleterious effect on timber. Amidships, a steering platform is arranged immediately above the engine-room. A mast is fitted forward carrying enough square feet of sail to give her steering way in the event of running short of fuel, when on long trips. Four large cowl ventilators are fixed forward, giving ample fresh air to the engine-room and forecastle, which are also provided with portholes.

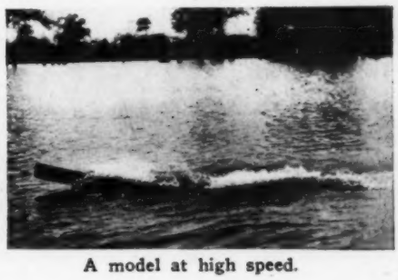
Amidships is the engine-room, which contains a 45 h.p. Thornycroft paraffin motor and reverse gear. This engine is worthy of special notice, as it is the first of a new type, or, rather, an old type redesigned. The latter engines are installed in the Scottish fishing boats. However, in future, fishing vessels will be equipped with the new motor. Formerly the valves were on opposite sides; these have now been brought to the same side. There are four cylinders, which are cast in pairs, with a bore of 6 in. and an 8 in. stroke. The vaporizer has also been redesigned, although it is still on the U-tube system. Arranged to start either with the lamp or on gasoline, it is situated on the starboard side. The float-chamber is provided with a large circular drip tray. Also worthy of note are the extra-large crank-chamber doors, through which the pistons can be removed without dismantling the engine. The fuel tank is fitted immediately aft the engine-room, and has sufficient capacity for 48 hours' running at full speed. Finally, it should be stated that, despite the weather conditions which prevailed on her trial trip, Paytena attained a speed of nine knots, on a trial displacement of 13 tons. Trials were also undertaken towing two 75-ton barges, which she easily accomplished.



Note the peculiar stern lines.

Possibilities in New South Wales.

FOR use in such a harbor as Sydney possesses, with its numerous indentations, comprising 200 miles of foreshores, it is small wonder that close on 700 motor craft are to be found. Scarcely ever is the sea so rough that even the smaller craft cannot make their way in and out of the innumerable bays which line the main harbor on both sides, says an English exchange. All types of motor craft are here to be found. Among the principal commercially-used craft are several 50 to 100-ton trading schooners with twin screws, having, as a rule, 60 h.p. sets. Messrs. Burns, Philp & Co., steamship owners, have quite a fleet of some dozen or so boats fitted with varying power, from 5 h.p. to 25 h.p. Then there is one 50 h.p. single propeller trading ketch, and another of 70 h.p. The Government have not been slow to recognize the value of the motor-driven boat, and several Government Departments have launches, including the Fisheries, Tourist, Defence, Health, Police and Harbor Departments, the majority of which boats are engined with American slow-running motors. Ferry boats also abound both in the harbor and on the various lakes, rivers and inlets of the coast and are to be found at pretty nearly all the popular pleasure resorts up and down the coast-line. Some fishing boats, too, have had auxiliary motor power successfully installed.

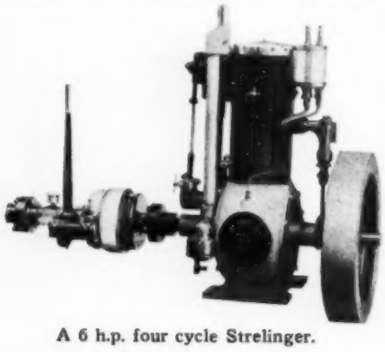


A model at high speed.

Motors for Motor Boats.

Strelinger 4-Cycle Motors.

The Strelinger Marine Engine Co., of Detroit, have been building marine engines for more than a decade. The company's product is especially designed and built to stand the hard service requirements of the oyster and



A 6 h.p. four cycle Strelinger.

fishing trade as well as to be perfectly suitable for use in pleasure craft. Strelinger motors are made in four to six cylinder models and of from 4 to 40 horsepower. We illustrate a single model with its reverse gear attachment. It will be seen that the crank-case is entirely enclosed and that the exterior of the cylinder is remarkably smooth. The valves seat in a port on the rearward side of the cylinder and the igniter works between them. The carbureter is placed low and a straight pipe extends directly upward to the housing over the automatic inlet. A plunger pump is supported by stud bolts and flange from a bracket cast integral with the cylinder and it is operated by an eccentric on the crankshaft just back of the flywheel.

Holmes Six Cylinder, Model F.

This latest product of the Holmes Motor Co., of West Mystic, Conn., has a bore of 6 inches, a stroke of 8 inches and is designed to run at 700 to 800 r.p.m.

The cylinders, as on all Holmes engines, are mounted on bronze A frames, to leave the engine "get-at-able" to every part. The sides of the framework between the cylinders and the base are enclosed by steel splash plates and the open basework is so devised that it can be entirely closed in if necessary with but very little added weight.

The water jacket is covered by removable plates on three sides so as to permit of easy cleaning out when necessary. The valves are operated by a one-piece camshaft which is mounted in a reversible bar or bracket containing the adjustable lifters. These lifters have fibre plugs in the top ends to cushion the click between the lifter and the stem of the valve.

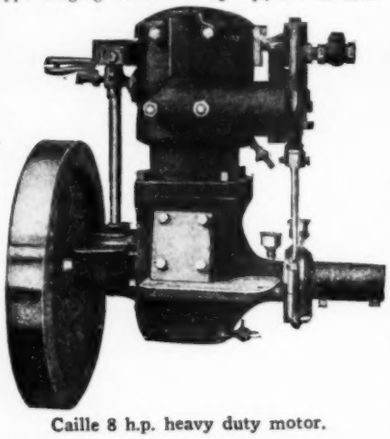
The intake pipes from the carbureter to the cylinders are so arranged that gas is carried to each cylinder alike in the same quantity and through the same distance by the shortest route and with as much straight lead and easy bends as possible.

The crankshaft of this machine is slightly offset from the center line of the cylinders so as to reduce the angularity of side thrust on the working stroke and to better balance up the top weights of the engine.

A very ingenious arrangement is the easy possibility of changing this engine over from a regular gas engine to a reversible one by simply substituting another cam bar containing a new and different camshaft and in case a self-starting engine is required either reversible or otherwise, an air timer is provided that can be easily put on without tearing down or upsetting the rest of the engine.

The Caille Heavy Duty Engine.

For a number of years the Caille Perfection Motor Co., of Detroit, Mich, have made a specialty of marine motors of the 2-cycle type ranging from 2 to 25 h.p., one to four

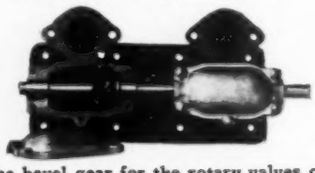


Caille 8 h.p. heavy duty motor.

cylinders, especially adapted for pleasure boats. But they are now giving close attention to the commercial end of the business, and, as a result of careful study of conditions, have produced an 8 h.p. heavy duty engine, designed exclusively for fisher boats, ferry boats and other commercial purposes.

This new engine is not, in any sense, an adaptation of their lighter models, but is a strictly commercial engine extra heavy throughout, reinforced at all wearing points with longer and heavier bearings than the usual practice calls for. The cylinders and crankcase are extra strong and heavy, every part is in proportion.

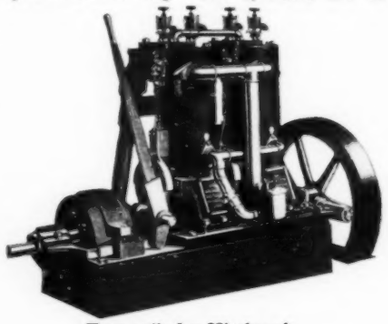
8 h.p. is developed at 500 revolutions per minute. The cylinders are 5¼ inches bore by 5 inches stroke. The crankshaft measures 1¾ inches; the propeller shaft 1½ inch and the engine complete includes an 18-inch, 3-blade bronze propeller with extra long bearings babbitted with the best grade babbitt.



The bevel gear for the rotary valves of the Willet.

Hitchcock Motors.

The four-cycle method of operation is used by the Hitchcock Gas Engine Co., of Bridgeport, Conn. The cylinder head is designed with combustion and valve chamber in one symmetrical casting. The cylinders are of



Two cylinder Hitchcock.

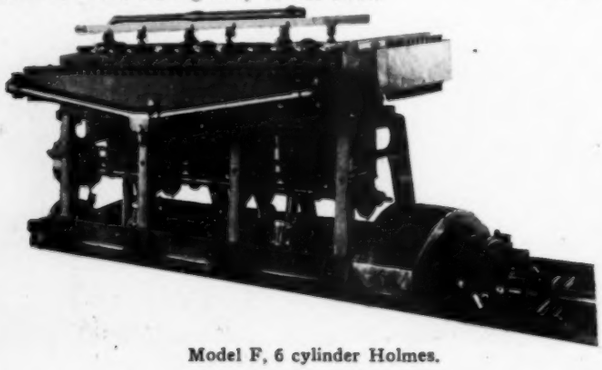
selected iron, and great care is taken to have them bored perfectly true and smooth. The pistons are made of a special iron and accurately fitted to the cylinders. The piston rings, four in number, are finished by special tools. The connecting rods are of forged steel fitted with special bronze boxes and the wrist pin is of tool steel of extra large size hardened and ground. The oiling of connecting rod boxes is continuous from the wrist pin, when the engine is running.

The exhaust valve and igniter are operated by a large two to one gear. In the face of the gear is cut an eccentric or groove, in which is fitted a segment that operates the igniter. The gear runs on a steel stud secured to a steel bracket. This allows the valve gear to be taken down intact. The bolt holes are slotted in the bracket, so that the bracket can be adjusted to always keep the gears on their proper pitch line.

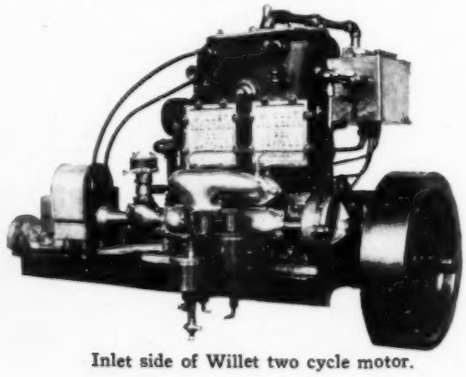
The igniter is made compact and durable, and can be removed intact from the engine. It is "all of the same hand" and any of the parts can be used on any cylinder or any size of engine.

The Willet Two Cycle Motor.

The cut at the right-hand lower corner of the page shows the two-cylinder, two-cycle motor which is being offered by the Willet Engine & Carbureter Company, of Buffalo, N. Y. It will be seen that the cylinders are fast in pairs. They have a bore of 4⅛ inches and a stroke of 4½ inches, and it is said that the motor will turn 150 r.p.m. Rotary valves are used for the inlets and they are operated from a shaft which runs across the crankcase and is driven by enclosed gears at the flywheel end. In the small cut, the bevel gears which drive the rotary valves and their housings are separately illustrated. The same shaft which operates the valves also drives the timer for battery ignition and the magneto, which is mounted on a plate bolted to the engine base. A lubricator is mounted on the forward side of the cylinders and supplies oil to all of the principal bearings, the lubrication of the connecting rods and pistons being affected by means of splash.



Model F, 6 cylinder Holmes.



Inlet side of Willet two cycle motor.

New Things for Motor Boatmen.

New Attachments and Accessories That are Offered to the Man with a Boat. The Month's Production of Devices Designed as Aids to Motor Boating.

[Under this heading will appear each month descriptions and, whenever possible, illustrations of the various devices designed to add to the pleasure and comfort of motor boating which have been brought out since the previous issue. It should be kept in mind that the department in any one issue is, as it were, only one month's instalment of the many useful things on the market, and that it will be well to consult the previous issues of MOTOR BOATING which will form, together, a very complete illustrated directory of the things the motorboatman needs.—In writing the makers of the articles shown, if our readers will mention MOTOR BOATING they will receive special attention.]

Fig. 1.—Gray Water Strainer.

The Gray Water Strainer (Fig. 1).—The Gray Motor Company, Detroit, Mich. This strainer is designed to keep dirty water out of the pump. Only clean water can pass through the strainer as it has two wire screens, one of large and one of small mesh to catch any particles, large or small. In order to clean, the end cap may be removed and screen withdrawn without disconnecting, as shown in illustration. The price, made of iron for fresh water is $1 and of bronze for salt water, $1.20.

* * *

"Handy" Repair Plates.—Electrical Maintenance and Repair Company, 200-202 Market St., Newark, N. J. In case of failure through excessive rate of discharge or overcharging of one's storage batteries, one or more of these plates can very readily be substituted for those sustaining damage. A small stock of these plates obviates the necessity for waiting for repair parts from the battery makers. The grids are made in hollow cage form, are properly proportioned, and are made of the best materials. The standard plates may be cut to fit all well known makes of batteries and are sold at a nominal price.

* * *

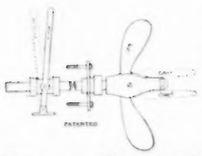


Fig. 2.—Thompson's Folding-Blade Propeller.

Thompson's Folding-Blade Propeller (Fig. 2).—The Thompson Propeller Company, South Portland, Maine. The folding propeller shown herewith is for use in auxiliary yachts, fishing boats, etc. By folding the blades as indicated by the dotted lines, the wheel will clear itself of grass and seaweed and furthermore in this position it will not drag water while the vessel is under sail or being towed. While not in operation it closes itself by a spring located in the tail end of the hub and covered by a cap. To make it effective in backing it may be locked from within the boat thus forming a rigid wheel. The propeller is made in four sizes of hub, each with three different diameters of blade which can be changed without removing hub from shaft. This permits changing one blade without buying a whole new propeller. Price without lock $14 to $18.

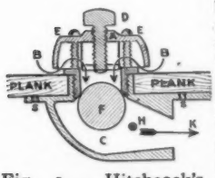


Fig. 3.—Hitchcock's Automatic Bilge Bailer.

* * *

Hitchcock's Automatic Bilge Bailer (Figs. 3 and 4).—Automatic Bilge Bailer Company, 150 Huntington Ave., Boston, Mass. Two forms of the bilge bailer are shown herewith which clearly show its operation. In both cases the water from the bilge is drawn out and left astern as indicated by arrow. When the boat is not in motion, the pressure of the water from without forces the ball against the seat and closes the opening. Fig. 3 is designed for use on fast boats and Fig. 4 for use on slower boats, in the latter type the aspirating action of the stream of water which passes through C-E is employed to draw out the water from the bilge. The price of Fig. 3 and of Fig. 4 for boats up to 20 feet is $5.

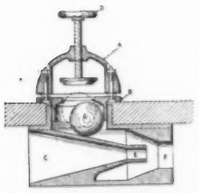


Fig. 4.—Hitchcock's Automatic Bilge Bailer.

* * *

McNab Marine Indicator (Fig. 5).—McNab Indicator Company, Bridgeport, Conn. This device is designed to enable the captain, or any one on board, to determine at a glance just what is happening in the engine room. As is shown by the illustration the indicator has two dials, H and I, and whenever the engine is in motion each revolution, whether astern or forward, is indicated by a plunger in one or the other of these. At either side there is a register which tabulates the number of revolutions up to ten million that the engine has made, either forward or backward, and from this, by knowing the number of feet that the boat moves for each revolution of the propeller, it is a simple matter to determine the distance and rate of travel. The dials are connected to an agitator on the engine by two small air pipes.

Fig. 5.—McNab Marine Indicator.

"Koven" Galvanized Tanks (Fig. 6).—L. O. Koven & Bro., 50 Cliff St., New York. These tanks are constructed from the best quality open hearth flange steel and the fittings are fastened in such a manner that they will not become loose. They are galvanized both inside and out and only the best quality of spelter is used to insure durability. The tanks are free from dross on the inside. They are built in sizes ranging from five to two hundred and sixty gallons capacity and ranging in price from five to one hundred dollars.

* * *

Fig. 6.—"Koven" Galvanized Tanks.

Britton Safety Lock Switch (Fig. 7).—Britton & Carleton Manufacturing Co., Cleveland, Ohio. These switches are neatly designed and finished and are for the purpose of assuring protection against theft of one's boat when for any reason it is left alone. It is easily installed and simply operated, taking the place of the ordinary switch in every way, and because of its small size it is much more sightly in appearance. Locks made for any type ignition system. Price $5.

* * *

Fig. 7.—Britton Safety Lock Switch.

The Kokomo Grease Gun.—Kokomo Grease Gun Co., Kokomo, Ind. This is an automatic grease gun which depends upon the use of compressed air for its action. The gun consists of a length of steel tubing, with a removable nozzle at one end and a fixed handle at the other end. Inside is a piston which divides the interior into two compartments, one for oil or grease and the other for compressed air. The latter chamber is closed and provided with an ordinary air valve such as is used on tires. In operation the nozzle is first removed and the lower compartment filled with oil or grease. The air compartment is then filled with air to a pressure of from 15 to 110 lbs. by means of a tire pump, and pressure on the nozzle will then allow the oil or grease to flow. The gun is made in one size and the price is $10.

* * *

Fig. 8.—The Gray Gasoline Strainer.

The Gray Gasoline Strainer (Figs. 8 and 9).—The Gray Motor Company, Detroit, Mich. This strainer will prevent, water, dirt, sediment or any foreign substance passing into the carbureter, thereby eliminating one of the most common causes of motor trouble. The gauze strainer deflects all particles into the pockets below and the drip cock when opened instantly drains the pocket without the necessity of shutting off the gasoline and stopping the motor. It is 3½ inches long, 1¼ inch wide x 2¾ inches deep, is made entirely of brass and sells for $1.

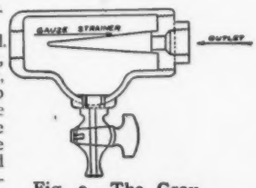


Fig. 9.—The Gray Gasoline Strainer in section.

* * *

White Canvas Motor Boat (Fig. 10).—E. M. White & Co., Old Town, Maine. This boat has the same general construction as a canoe except that it is more strongly built. The ribs are one-half inch thick, 3 inches wide and spaced 4½ inches between centers. Planking is ¼ inch thick, put together with smooth lapped seams making it almost water tight before canvas is put on. An invisible air chamber conforms to the lines of the boat on each side and meets the well-rounded deck in an easy curve. This gives it great buoyancy and makes it more seaworthy. The length is 20 feet, beam 51 inches and weight with engine 450 pounds; equipped with a two horsepower motor, it will make nine miles per hour and with one of four horsepower a speed of twelve miles per hour. The price with the two horsepower engine is $240 and with four horsepower, double cylinder engine $300. This company also builds a speed boat of similar construction, but five feet longer. With the regular six horsepower engine, it develops a speed of fifteen miles per hour. A larger engine may be used, however, as no amount of vibration can work the seams loose. The price of this model is $500.

Fig. 10.—White Canvas Motor Boat.

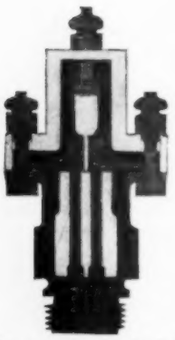


Fig. 11.—Dynatak Cylinder Plug.

Fig. 12.—Dynatak Indicator.

Fig. 13. — Seamless Steel Tinned Tank.

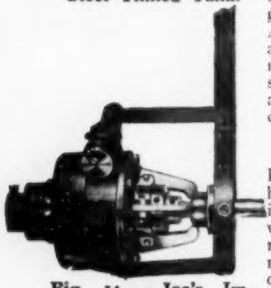


Fig. 14. — Joe's Improved Reversing Gear.

Fig. 15. — Acetylene Safety Storage System.

Dynatak (Figs. 11 and 12).—Electric Speedometer and Dynamometer Mfg. Co., Washington, D. C. In this instrument, which can be used either as a speed indicator or dynamometer as desired, the use of thermocouples arranged within the spark plugs or in special plugs for insertion into the combustion chambers is employed. The face of the indicating galvanometer is provided with two sets of graduations over which the hand sweeps. One of these graduations is in revolutions per minute, the current being supplied by a small magneto driven from the shaft. The other set of graduations is in other units so that one may read the relative horsepower development in any one or all of the cylinders through the temperature indications made thereon by the hand. The rotary button switch shown serves to connect the cylinders individually or collectively or to connect with the speed indicating magneto. Prices range from $125 to $150, depending upon size of the instrument and number of cylinders.

* * *

Nageborn Carbureter (Fig. 10).—Du Brie Motor Company, Detroit, Mich. The principal distinctive feature of this carbureter is the control of the float by means of a ball check valve. When the float chamber is filled, the ball check drops into its seat and is held by the pressure of the gasoline on top of it. As the gasoline is drawn out of the float chamber, the float drops and it raises a pin which lifts the ball and allows the gasoline to flow again. It is claimed that this construction prevents any possibility of flooding. The gasoline feed from the float chamber to the needle point is governed by another ball check and is regulated by a pin above the ball. This insures a constant supply of gasoline at the needle point. The retail price is $7 for ¾ inch, $9 for 1 inch and $11 for 1¼ inch.

* * *

Seamless Steel Tinned Tank (Fig. 13).—Janney, Steinmetz & Co., Philadelphia, Pa. The tank shown herewith is constructed of cold drawn seamless steel, tinned with block tin and tested to a hydraulic pressure of 300 pounds to the square inch; besides being leak proof, the heavy coating of tin insures its being free from the corrosion commonly caused by impurities in the gasoline. It is made in sizes from one to one hundred gallons.

* * *

Joe's Improved Reversing Gear (Fig. 14).—The Snow & Petrelli Mfg. Company, New Haven, Conn. By the adoption of a multiple disc friction arrangement, the holding power of the new model has been doubled so that the gear will not slip under the greatest power. A positive lock on the adjusting collar insures against loss of adjustment at the critical moment. The few slow running spur gears are so balanced that there can be no back-lash and consequent rumble. It is strong, light, compact and noiseless.

* * *

"Rubberwhite."—Chander & Brown, 1931 Broadway, New York City. This preparation has been gotten out for the purpose of keeping rubber mats, etc., in perfect condition without the use of materials injurious to the rubber. An application of this material cleans rubber mats so that they have the appearance of being new. One application per week is said to be sufficient to keep any mat in first-class condition and preserve it indefinitely. It is applied easily and dries quickly. The price per can is 50c.

* * *

Acetylene Safety Storage System (Fig. 15).—The Commercial Acetylene Company, 80 Broadway, New York. This storage system consists of cylindrical tanks of various sizes from one that can be carried in a hand satchel to one 9½ feet long. The cylinders are packed with asbestos discs with an 80 per cent porosity; the asbestos is saturated with acetone, a chemical very similar to wood alcohol, which at a normal temperature and 150 pounds pressure, absorbs 25 times its own volume of the gas, increasing the storage capacity of the tank ten fold. When the pressure of the tank is relieved by the opening of a jet, the acetone releases the gas. A regulating valve through which the gas passes after leaving the cylinder, regulates the pressure at the burners so that it makes no difference how much gas there is in the tank or how many lights are being used, and the flame and the pressure of the burners are always the same.

Dover Automatic Gasoline Funnel (Fig. 16).—Dover Stamping & Manufacturing Co., Cambridge, Mass. The Dover funnels for the pouring of gasoline, besides having a side handle so that they can be readily held, have a new device in the shape of a shut off valve, which operates automatically so that no fuel is lost, should it be necessary to withdraw the funnel from the tank filler opening before it is emptied. The cut is really self-explanatory. The ball valve is connected by a stem with an outside part in such a manner that the weight of the funnel resting against the tank opens the valve, but as soon as the funnel is lifted up the ball automatically seats. Prices range from $1.50 to $2 each.

* * *

Auto Phonendoscope (Figs. 17 and 18).—G. P. Pilling & Son, Philadelphia, Pa. This instrument is a sort of robust stethoscope designed for the purpose of locating undesirable noises and knocks in a boat's mechanism, particularly the engine. Through its use it is possible to determine the exact location of the source of any sound existing in the engine. It is put up in a neat hardwood case and consists of a rod which contacts a diaphragm, the air chamber above which communicates with the ears by means of flexible tubing. Price complete in a velvet lined case, $6.

* * *

Lunkenheimer Exhaust Pressure Regulator.—The Lunkenheimer Co., Cincinnati, Ohio. The object of this device is to automatically control the pressure of the exhaust gas for forcing gasoline from the main tank to an auxiliary tank or direct to the carbureter or for operating an exhaust pressure lubricator. It may be placed in any convenient location near the motor and connected with the exhaust pipe by a short length of tubing. The gas entering the regulator passes through a spiral chamber which cools and purifies it, then through a fine gauze strainer and a check valve to a spring relief valve which may be adjusted to maintain any pressure desired from 2 oz. to 4 lbs. It then passes to the gasoline tank or pressure lubricator as the case may be. The regulator is made in nine models to suit varying inlet and outlet conditions and the price is $9 each.

* * *

Whiting "Airbureter-Mixer" (Fig. 19).—O. J. Garlock & Company, Palmyra, N. Y. The construction of the mixer is such that the mixture of gasoline and air in passing through it is claimed to be made thoroughly homogeneous, so that one gets absolutely the same mixture quality in all the cylinders irrespective of the speed of the engine. Because of this, it is further claimed that the power of the engine is greatly increased and the fuel consumption lowered. At the same time that this is being accomplished the "airbureter-mixer" removes all foreign matter from the mixture and thereby prevents its entrance into the cylinders where it usually deposits carbon.

* * *

Marcy's Cotter Pin Tool (Fig. 20).—Marcy Tool Works, Putnam, Conn. This tool is intended for reaching into out-of-the-way places for the drawing of cotter pins. Both ends of the tool are bent at right angles with the shank and one of them is pointed for engagement with the eye of the cotter pin. The other end is flattened and hardened to form an offset cotter spreader and screw driver so that inaccessible screws may be readily operated. Both these operations are made clear in the accompanying cut. The value of this tool can be appreciated only by those who have had occasion to manipulate such inaccessible pins and screws.

* * *

Comet Spark Plug (Fig. 21).—The Oakes & Dow Co., Chardon St., Boston, Mass. The Comet plug was designed to overcome the objectionable features of ordinary mica insulation. The insulation instead of being composed of mica washers in the engine end of the plug is entirely longitudinal. There is a tendency in laminated plugs to short circuit, for the reason that electric currents that follow the grain of non-conductors will follow the grain of the washers out to the sides instead of to the tips of the plug. This plug overcomes this tendency, and as it is stronger than the ordinary porcelain plug, has proved quite a success. Price for standard size $1.50.

Fig. 16.—Dover Automatic Funnel.

Fig. 17.—Auto Phonendoscope.

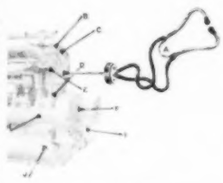


Fig. 18.—Auto Phonendoscope.

Fig. 19.—Whiting "Airbureter-Mixer."

Fig. 20.—Marcy's Cotter Pin Puller.

Fig. 21.—Comet Spark Plug.

E. M. White & Company, Old Town, Me., builders of motor and paddling canoes, are just completing an addition to their plant, a three-story structure 36 by 50 feet. The enlarged plant will enable them to take care of increased business.

The Caille Perfection Motor Company, Detroit, Mich., makers of Perfection engines, announce that they have made agency arrangements with the following firms: Geo. G. McLaughlin Mfg. Co., 24 Washington Avenue North, Boston, Mass.; Elisha Webb & Sons Co., 136 South Front St., Philadelphia, Pa.; Loane-Hiltz Engineering Co., 306 South Hanover St., Baltimore, Md.; Osborne-Marlowe Co., 129 Congress St. West, Savannah, Ga.; Gibbens & Stream, 213 Canal St., New Orleans, La.; Woodhouse Gasoline Engine Co., 78 Jackson St., Seattle, Wash.; and the Marine Engine & Supply Co., 131 East 6th St., Los Angeles, Cal. These companies will carry complete stocks of Perfection engines and parts. The Caille Perfection Motor Company say that they are anxious to make similar arrangements for a representative in Canada, and would be glad to hear from any reliable house which wishes to apply for an agency.

The Upson-Walton Company, 1294-1310 West 11th St., Cleveland, Ohio, cordage makers, state that they have lately entered more extensively into the motor boat and yacht supply business, and have opened a department carrying a complete and up-to-date stock of all the standard supplies and the latest devices for promoting safety and comfort in small boat navigation. The Upson-Walton Company has been well known for nearly forty years to the captains of the Great Lakes merchant fleet as suppliers of cordage, wire rope, blocks, canvas, etc. Changing conditions and the growth of motor boating have led them to extend their business into the field of equipment for motor boats and yachts.

La Truda's Motor.—Our attention has been called to the fact that La Truda, which was illustrated on page 44 of our last issue, is fitted with a Sterling engine.

Gray Motor Company, Detroit, Mich., are sending out notices to all the users of Gray engines reminding them of the danger of their engines freezing up in the winter, and that they should be careful to drain the water jacket through the means provided for that purpose. The Gray guaranty for free replacement does not cover cylinders that are cracked from freezing. The company also make suggestions as to the best manner of preserving the motor from rust through the winter season.

The R. L. Kenyon Company, La Crosse, Wis., makers of the Kenyon life preserver boat cushion, motor boat fenders, canvas boat covers, etc., announce that they have made arrangements with the boat, engine and supply house of James M. Wait & Company, 1205 Michigan Avenue, Chicago, to act as their agents for the territory adjacent to Chicago.

The W. H. Mullins Company, Salem, Ohio, makers of Mullins pressed steel boats, have just closed a contract for what is said to be the largest order ever placed for marine engines, with the Roberts Motor Company, of Sandusky, Ohio, for 2,000 motors for 1910 delivery. The motor, which is two-cycle, was designed by E. W. Roberts especially for the Mullins company and will be known as the "Mullins" engine. The motor is light in weight, with mechanical oiler, automatic float feed carbureter and improved timer. An interesting feature is that the motor is guaranteed against back-firing, and the company say that if a purchaser can make his engine backfire they will take it off his hands and replace it with a new one. The Mullins company are getting out some new models of their steel motor boats.

The Ferro Machine & Foundry Company, Cleveland, Ohio, are pointing with justifiable gratification to the awards made to the Ferro engines at the Alaska-Yukon-Pacific Exposition. For two-cycle motors, the first prize, a gold medal, was awarded to the Ferro. In the reversing mechanisms class, the Ferro reverse gear won the gold medal, and the Ferro company also received a gold medal for the general excellence of their marine exhibition. In the class for heavy duty engines the gold medal went to the San Francisco Standard four-cycle motor, and the second prize, a silver medal, to the Ferro. This is said to be the first time that an important award for heavy-duty engines has been adjudged to a two-cycle motor, in competition with four-cycle slow speed engines.

The Whitehall Motor and Boat Company, Whitehall, N. Y., are adding to their plant on the Whitehall bar, in Lake Champlain. In addition to their present large machine shop, they are erecting a new building, 65 by 35 feet, for the storage and repair of motor boats.

Loantaka—Mr. Thos. D. Bowes wishes us to note that the 73-footer, described on page 42 of our last issue, was designed by the firm of Bowes & Watts.

Mechanical Devices Company is now the name of the former **Glens Falls Manufacturing Company,** makers of patent universal joints, stuffing boxes and similar devices for motor boats. The company has given up its Glens Falls offices, and under the new name will manufacture its devices at its own plant in Watervliet, N. Y., near Albany. The old Meneely machine shop has been remodelled and extended for occupancy by the Mechanical Devices Company. Leon L. Tripp, who has been for some years with the industrial department of the Delaware & Hudson Company, has been taken into the firm as secretary and treasurer. This company was awarded a gold medal at the Alaska-Yukon-Pacific Exposition for the excellence of its manufactures of motor boat accessories.

Toppan Boat Manufacturing Company, builders of Toppan motor dories, are now operating a new extension to their plant at Medford, Mass.

W. David Murray, the boat builder, of Portland, Me., is at work on five motor-propelled life boats which he has contracted to build for the United States Lighthouse Department, first district. One of them, already launched, is to be used at the Diamond Island station, while the other four will be stationed at various points along the Maine and New Hampshire coasts. The boats are equipped with 12 h.p. Lothrop motors, and are 24 feet in length, 6.6 feet breadth, oak frame, cedar planking and copper fastened throughout.

Sharptown Yacht Company has been organized with $15,000 capital, to build yachts and motor boats at Sharptown, Md. The company is constructing shops on the wharf of S. J. Cooper & Son, where a large number of hands will be employed. The new company has contracts that will keep it busy for some months to come. B. H. Phillips is president, Jos. P. Cooper, secretary and treasurer.

National Steel Products Company, makers of ignition equipment, have removed their general offices from 700 Superior Building, Cleveland, O., to their new factory recently purchased at Lorain, Ohio. New machinery is being installed.

Auto and Motor Boat Company, Houston, Tex., are enlarging their machine shop.

The Atlantic Maritime Company, 192 Commercial St., Boston, Mass., have been appointed New England distributors for the Ejector Muffler and Reid Underwater Exhaust, as manufactured by the Motor & Mfg. Works Co., of Geneva, N. Y. The Atlantic Maritime Company state that they are open to offers from other manufacturers who wish New England representatives for specialties in the motor boat line.

Hallin Gas Engine & Boat Company, Tacoma, Wash., is a new corporation with $15,000 capital, in which L. A. and C. A. Hallin, O. Ohlson, E. C. Johnson, and G. F. Franzen are directors. The company will build boats and deal in all types of boats and engines at Tacoma.

Holmes Motor Co., West Mystic, Conn., is arranging to extend its business to take in the manufacture of boats as well as motors.

New Incorporations

Matson Life Raft Company, Boston, Mass. Capital, $100,000. Importers: H. J. Matson, J. L. Rice. To manufacture and sell life-saving rafts.

Mundy Submariphone Company, Waterville, Me. Capital, $500,000. Incorporators: H. P. Davis, L. B. Thayer. To manufacture and deal in marine and submarine signalling apparatus.

Simplex Coupler Company, Chicago, Ill. Capital, $2,500. Incorporators: N. Wilder, H. A. Maxfield, S. G. Petterson. To manufacture and sell motors, engines and metal specialties.

John C. Wolff Boat and Launch Works, Bayonne, N. J. Capital, $50,000. Incorporators: W. S. Rauch, I. B. Grant, G. A. Meyer, G. Ruh, J. C. Wold. To build and design boats, launches, etc.

The Month's Motor Boating Patents.

ISSUED OCTOBER 12, 1909.

936,312. **Boat-Plug.** John W. Danford, Maraxlon, England. Filed Apr. 19, 1909.

936,409. **Internal-Combustion Engine.** Ellsworth Chapman, Pontiac, Mich. Filed Oct. 2, 1907.

936,466. **Ship-Cleaning Device.** William Martin, Watertown, N. Y. Filed Jan. 5, 1907.

936,507. **Spark-Plug.** James C. Anderson, Washington, D. C. Filed Mar. 20, 1909.

936,508. **Propeller.** Theodore Amnelius, South Framingham, Mass. Filed Jan. 14, 1909.

936,514. **Process of Making Composite Ships' Plates.** George C. Berg, San Fracisco, Cal. Filed Aug. 6, 1907.

936,549. **Set-Screw.** Charles G. Lundholm, Las Vegas, Nev. Filed Dec. 28, 1908.

936,564. **Timer for Igniters or Sparkers.** Harry Rose, Three Rivers, Mich., assignor to Sheffield Car Company, Three Rivers, Mich. Filed June 18, 1908.

936,699. **Air-Compressor.** Joseph H. Dalley, Wilson, N. Y. Filed Apr. 10, 1909.

936,632. **Automatic Releasing Device for Boats.** Charles Hunt, New York, N. Y. Filed Apr. 8, 1909.

936,636. **Gas-Producer.** Robert B. Kernohan, Pittsburg, Pa. Filed Sept. 23, 1908.

936,694. **Reversing Mechanism.** Frederic J. Ball, New York, N. Y., assignor to New York Gear Works, Brooklyn, N. Y., a Copartnership. Filed Jan. 31, 1908.

936,700. **Engine-Starter.** Lincoln Burnham, Urbana, Ohio. Filed Mar. 15, 1909.

936,759. **Means for Producing Lubricating-Bearings.** Frank J. Randall, Los Angeles, Cal. Filed Oct. 30, 1907.

936,842. **Process of Removing Paint, Varnish, and Finishes.** John M. Wilson, Montclair, N. J. Filed Apr. 4, 1908.

936,872. **Compression Grease-Cup.** Louis W. Durst, Philadelphia, Pa. Filed Mar. 31, 1909.

936,964. **Starting Device for Explosive-Engines.** Harry Wayte, Milwaukee, Wis., assignor to Meyer Desenberg, Jr., Kalamazoo, Mich. Filed Jan. 5, 1906. Renewed July 9, 1909.

936,972. **Explosive-Engine.** William J. Wright, Franklin, Pa. Filed Feb. 7, 1906.

937,007. **Mop.** James F. McLaughlin, Erie, Pa., assignor of one-third to Charles Rappold and one-third to George McLaughlin. Filed Jan. 13, 1906.

ISSUED OCTOBER 19, 1909.

937,052. **Terminal-Connector Construction.** Charles Cuno, Meriden, Conn., assignor to Connecticut Auto Engineering Corporation, Meriden, Conn., a Corporation of Connecticut. Filed Feb. 10, 1900.

937,090. **Marine Reversing-Gear.** Joseph Petrelli, New Haven, Conn., assignor to The Snow & Petrelli Mfg. Co., New Haven, Conn., a Corporation. Filed July 3, 1908.

937,091. **Reversing-Mechaniam.** Joseph Petrelli, New Haven, Conn., assignor to The Snow & Petrelli Mfg. Co., New Haven, Conn., a Corporation. Filed Jan. 18, 1909.

937,127. **Means for Starting Internal-Combustion Engines.** William B. West, Columbia, Mo. Filed Jan. 28, 1909.

937 181. **Internal-Combustion Engine.** David Roberts and Charles James, Grantham, England. Filed Sept. 16, 1907.

937,246. **Pump.** Richard F. Kreiter, Houston, Tex. Filed Oct. 17, 1908.

937,298. **Reversible Rotary Gas or Oil Engine.** Adolph Finch, San Diego, Cal. Filed Nov. 20, 1906.

937,324. **Electric Battery.** Maurice Nicolas, Paris, France. Filed Feb. 21, 1907.

937,390. **Fuel-Injection Nozzle for Oil-Engines.** Henry Soeldner, East Williamsburg, N. Y., assignor to De La Vergne Machine Company, New York, N. Y., a Corporation of New York. Filed Mar. 23, 1909.

937,441. **Nautical Instrument.** Robert J. Hodge, Franklin Park, Mass. Filed June 17, 1908.

937,466. **Revolving Grate for Gas-Producers.** Hugo Rehmann, Mülheim-on-the-Ruhr, Germany. Filed May 8, 1907.

937,501. **Parallel-Ruler.** George W. Young, Seattle, Wash. Filed Jan. 20, 1908.

937,522. **Ignition Apparatus.** George Haniquet, Longbeach, Cal. Filed June 11, 1908.

937,536. **Carburetor.** Frank H. Knight, Washington, D. C. Filed July 23, 1906.

937,588. **Storage Battery.** Louis H. Flanders, Wilkinsburg, Pa., assignor to The Westinghouse Machine Company, a Corporation of Pennsylvania. Filed Aug. 6, 1904.

937,590. **Electromagnetic Means for Operating Air and Other Whistles.** Herbert H. Freeman, St. Paul, Minn. Filed Aug. 24, 1908.

937,665. **Muffler.** John M. Watson, New Orleans, La. Filed Mar. 19, 1909.

937,687. **Gas-Producer.** Fritz Müller, Darmstadt, Germany. Filed Dec. 7, 1906.

937,690. **Combination Priming-Cup and Spark-Plug.** Arthur Peltier, Detroit, Mich., assignor of seven-sixteenths to John Houpt, Detroit, Mich. Filed Nov. 30, 1908.

937,709. **Switch.** Homer N. Motsinger, Pendleton, Ind., assignor to Motsinger Device Mfg. Co., Pendleton, Ind., a Corporation of Indiana. Filed Mar. 28, 1908.

937,713. **Safety-Vent.** Marshall H. Page, San Francisco, Cal., assignor to United Sales Company, a Corporation of California. Filed Dec. 16, 1908.

937,735. **Propeller for Boats.** Henry Zemke, Bridgewater, S. D. Filed July 15, 1909.

937,743. **Governor for Explosive-Engines.** Horace E. Woolery, Fairmont, Minn., assignor to Fairmont Machine Company, Fairmont, Minn., a Corporation of Minnesota. Filed Nov. 9, 1908.

75,557. (Trade-Mark Registered) **Propellers.** Columbian Brass Foundry, Freeport, N. Y. Filed June 4, 1909. Published Aug. 17, 1909.

75,563. (Trade-Mark Registered) **Spark-Plugs.** Emil Grossman Company, New York, N. Y. Filed Apr. 27, 1909. Published Aug. 17, 1909.

ISSUED OCTOBER 26, 1909.

937,854. **Hydrocarbon-Mixer.** William C. Paul, New York, N. Y., assignor to Charles H. Connor, Rye, N. Y. Filed Oct. 17, 1908.

937,862. **Internal-Combustion Engine.** John V. Rice, Jr., Bordentown, N. J., assignor to Fred E. Tasker, New York, N. Y. Filed Sept. 16, 1905.

937,908. **Spark-Plug.** Otto C. Winestock, Perkinsville, Vt. Filed Sept. 1, 1908.

938,101. **Muffler.** Harry B. Winters, Sewickley, Pa. Filed Feb. 5, 1909.

938,108. **Spark-Plug.** William S. Bechtold, Newark, N. J. Filed June 24, 1909.

938,123. **Electric Igniter for Gas-Engines.** James A. Charter, Chicago, Ill., assignor to Austin Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed July 28, 1908.

938,143. **Sounding-Tackle.** Oscar Gutt, Geestemünde, and Friedrich H. C. Heyn, Hamburg, Germany. Filed Aug. 1, 1908.

938,188. **Spark-Plug.** Fred H. Weinhauer, New York, N. Y. Filed May 11, 1909.

938,208. **Combined Timer and Distributer.** George T. Brown, New York, N. Y. Filed Mar. 5, 1909.

938,251. **Antifriction-Bearing.** Chester A. Latham, Wichita, Kans. Filed Mar. 22, 1905.

938,290. **Propeller.** Milton D. Thompson, South Portland, Me. Filed Mar. 3, 1909.

938,291. **Propeller.** Milton D. Thompson, South Portland, Me. Filed July 15, 1909.

938,292. **Valve.** Charles Walnwright, Erie, Pa. Filed Apr. 15, 1909.

938,312. **Battery.** William Gardiner, Chicago, Ill., assignor to Ajax Battery Company, Chicago, Ill., a Corporation of Illinois. Filed Feb. 17, 1908.

938,360. **Valve-Gear.** Austin M. Wolf, New York, N. Y. Filed Jan. 9, 1909.

938,386. **Valve-Gear for Explosive-Engines.** Arthur A. Karcher, Detroit, Mich. Filed Mar. 5, 1909.

938,401. **Explosive-Engine.** Francis H. Treat, Cleveland, Ohio. Filed Apr. 15, 1907.

938,420. **Process of Making Piston-Packing Rings.** William Geiser, Neodesha, Kans. Filed Jan. 18, 1909.

938,431. **Collapsible Bucket.** Darius M. Orcutt, Council Bluffs, Iowa. Filed May 6, 1908.

938,447. **Davit for Hoisting and Lowering Boats.** Axel Welin, London, England, assignor to Welin Quadrant Davit, a Corporation of New York. Filed Dec. 2, 1907.

938,448. **Davit for Hoisting and Lowering Boats.** Axel Welin, London, England, assignor to Welin Quadrant Davit, a Corporation of New York. Filed Dec. 2, 1907.

ISSUED NOVEMBER 2, 1909.

938,633. **Internal-Combustion Engine.** Gustav V. Benson, Chicago, Ill. Filed July 14, 1909.

938,645. **Ship.** Henry C. Davis, Philadelphia, Pa. Filed July 15, 1909.

938,695. **Marine Table.** Alonzo H. Pence, Somerville, Ala. Filed June 14, 1909.

938,733. **Propeller.** Monnie R. White, Deal Island, Md. Filed Feb. 23, 1909.

938,750. **Ship-Propelling Device.** Moses Franklin, Grand Junction, Colo. Filed July 22, 1909.

938,772. **Duplex Thrust Device for Friction-Clutches.** Asher Lambert, Newark, N. J. Filed Feb. 27, 1909.

938,780. **Nautical Instrument.** Clarence A. McCallister, Marietta, Wash. Filed Oct. 10, 1908.

938,794. **Ship-Cleaner.** Herbert Schwartz, Nashville, Tenn. Filed May 12, 1908.

938,800. **Driving and Reversing Mechanism.** Frederick A. Thurston, Lynn, Mass., assignor of one-half to Alexander Stewart, Jr., Lynn, Mass. Filed Apr. 10, 1908.

938,860. **Muffler.** George C. Hicks, Jr., Connersville, Ind., assignor to The P. H. & F. M. Roots Company, Connersville, Ind. Filed June 19, 1909.

938,894. **Carbureter.** Samuel W. Rapp, Detroit, Mich. Filed Jan. 9, 1908.

938,911. **Propelling Means for Vessels.** Thomas B. Taylor, New York, N. Y. Filed Aug. 17, 1906.

938,972. **Navigation Apparatus.** William J. Chance, Dawson, Yukon Territory, Canada. Filed July 15, 1907.

939,006. **Storage Battery.** Gerhard M. W. Goettling, Brookline, Mass. Filed Jan. 4, 1909.

939,027. **Safety Crank.** Carl C. Ilg, New York, N. Y., assignor of onehalf to Francis Nagy, New York, N. Y. Filed July 6, 1908. Renewed Sept. 20, 1909.

939,047. **Packing-Ring.** Charles R. Maples, Cleveland, Ohio. Filed Aug. 8, 1908.

Trade Literature Received.

The Electric Speedometer & Dynamometer Manufacturing Company, Washington, D. C. Illustrated catalog of the Hopkins "Dynatak" thermo-electric tachometer and dynamometer for testing and indicating speed of internal combustion engines.

Springfield Motor Company, Springfield, Mass. Catalog describing the Springfield two-cycle marine motors, with either jump spark or make-and-break ignition.

H. W. Johns-Manville Company, 100 William St., New York. Catalog of "J-M Sanitor" one-piece seats and covers for water closets.

Charles E. Miller, 97 Reade St., New York City. 1910 advance catalog of accessories and supplies for motor boatmen.

Valley Boat and Engine Company, Baldwinsville, N. Y. Complete catalog of 40 pages, describing their standard designs of motor boats of all types, finished hulls or erected frames.

Sales and Charters.

CELESTE—Auxiliary schooner yacht, sold by D. N. Seely to Herald Hill.—(Manning's Yacht Agency.)

JINGO—25 foot auxiliary sloop, sold by Augustus P. Loring, Boston, to Sumner C. Andrews, Gloucester, Mass.—(Hollis Burgess.)

RADHA—Auxiliary sloop, sold by William A. Swasey to J. H. Carstairs.—(Manning's Yacht Agency.)

SABINE—40 foot auxiliary fishing sloop, sold by Edward P. Boynton, Boston, to Manuel J. De Silva, Boston.—(Hollis Burgess.)

THAIS—Motor yacht, sold by G. B. Spearin to T. D. Barry.—(Manning's Yacht Agency.)

At Lake Arthur, La. Freighting oil and cotton on the Mermenton River, with a boat equipped with a 7h.p. Gray engine.

Motor Boats in Ceylon.

ALMOST the first thing which is brought under the notice of a traveler in Ceylon, more especially if he spends some days in and about Colombo, is the comparatively small number of motor craft in use there. Exhaustive inquiry into just why the internal-combustion engine has not become more popular for marine purposes, especially for use in pleasure craft, is usually met by the answer that up to quite recent date the few boats having motors have not proved over satisfactory, and also because cruising off the somewhat treacherous coast requires much experience and a suitable type of boat.

Although during monsoon weather storms gather with much rapidity, they are usually preceded by unmistakable indications of their advent, by which the careful boat owner may be prepared, says A. G. Hanford in Motor Boat of England. It is true that Ceylon is far from the perfection of the cruising man's desires, for sheltered bays and harbors are not to be found between Colombo and Galle, with the exception of Beruwela, which offers excellent protection for the weather-bound mariner, while the coast northward of Colombo is extremely inhospitable, affording no sheltered anchorage from the strong north and northwest winds. Excellent cruising weather is, however, to be experienced during the months of February, March and April, and any well-found and satisfactorily-engined craft of about 35 feet over all can with safety make the journey to Weligama (Southern Province), Rameswaram and Paumblem, as well as to the Pearl Banks, or even to Galle, the old Dutch capital of the island—a distance of about 70 miles. True, a good look-out must be kept for reefs, sand-pits, and shoals when coasting, especially in the shallow waters north of Colombo.

But cruising by no means exhausts the pleasures of marine motoring; for, perhaps, no finer sheet of sheltered water exists in the whole of mid-Asia than Colombo Harbor. This harbor, which is almost entirely artificial, has an area of 660 acres at low water, and is always an interesting sight, crowded as it is with every type of ship afloat—from stately liners, Australia or China bound, to native sailing junks from India and the Straits Settlements, while the ubiquitous catamaran plies from ship to shore. The breakwater, which extends across practically the whole of the outer harbor, is a splendid piece of massive engineering work some 7,880 feet in length. It has two gaps in it, the one 800 feet and the other 700 feet wide, through which the shipping enters and leaves the harbor. Massive it needs to be, since the huge rollers which dash against it in all weathers, especially during the monsoon season, have to be seen to be believed.

There are no vexatious restrictions imposed upon owners either by the government or by the harbor authorities. A license of Rs. 6 ($2.50) per annum is the only charge made by the authorities, and this applies equally to all craft in use in the various harbors of the island, whether steam tenders, native rowing boats or motor craft. The harbor authorities also require that every "tindal" (Hindustani word for coxswain) should pass an examination and hold a certificate for harbor navigation, but this also applies equally to all craft.

In practically every instance the motor boats used for commercial purposes have natives as engineers and "tindals." These include Singalese, Tamils, Burghers, etc., and it is remarkable how well some of these natives understand and run the engines entrusted to their care. In the past, however, there can be no doubt but that the custom so prevalent throughout the East, viz., of handing everything over to a "boy" to see to, has had a prejudical effect upon the marine motor industry in Ceylon, as it is unreasonable to suppose that even an intelligent native is able to get the best work out of an engine the very fundamental principles of which are in many cases unknown to him. To this cause the writer is inclined to attribute in no small measure the comparatively small number of marine motors in use throughout the island. Without wishing to labor the question, I think that manufacturers should be made aware of the extent to which their products are at the mercy of native engineers throughout the East, for the Anglo-Indian in Ceylon is by no means alone in his habit of handing almost everything over to the charge of his "boy."

Fuel is a costly item throughout the East, the prices in Ceylon being—gasoline 40 cents, benzine 36 cents, and best kerosene 20 cents per gallon, for small quantities.

Several firms at Colombo hold agencies for motor cars, and would doubtless undertake agencies for marine motor manufacturers. Messrs. Walker, Sons and Co., with their extensive and well-appointed workshop for marine engineering and boat building, are eminently suitable for marine motor agency work, if they would undertake it.

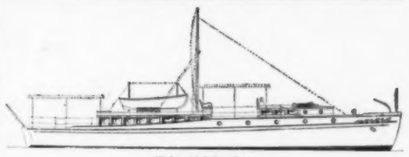
As far as available records go, it would seem that the first boat driven in Ceylon waters by means of a motor is that owned by Mr. John Hagenbeck, a Colombo shipchandler, and a brother of the well-known Mr. Carl Hagenbeck, of Tierpark Zoo, Strellingham, Hamburg. The hull measures 30 feet over all by 7 feet beam, and is fitted with a very old 10 h.p. double-cylinder Daimler engine. This boat was imported as far back as 1901, and has been in continuous use since then, giving her owner every satisfaction. Her chief mission is putting men and stores on board the various ships calling at Colombo. The engine is a very old type of Daimler, and shows but little sign of wear and tear despite the hard uses it has been put to. Benzine is the fuel used, and this Mr. Hagenbeck imports from Hamburg, as he finds that he gets more efficiency from this fuel than from the gasoline sold at Colombo.

One of the next to arrive was a boat owned by Messrs. Walker, Sons and Co., of Colombo. The hull, which measures 37 feet by 7 feet, is of somewhat heavy construction and was built in England. The power is derived from a 15 h.p. twin-cylinder Gardner kerosene engine imported in 1904, and this drives the boat at a full eight knots. This engine has given over four years satisfactory and continuous use, and is today in splendid order, a striking testimonial to the manufacturer's workmanship. The craft has proved of immense service to her owners, being used in connection with their marine engineering works, her principal duties lying in taking mechanics, tools, etc., from one part of the harbor to another.

The only American manufactured engine I saw at Colombo was a 15 h.p., two-cylinder Monarch. This engine runs on gasoline and has a Longuemare carbureter, while ignition is effected by means of a trembler coil. The hull is a rather heavily-constructed one, measuring 30 feet 6 inches by 7 feet 1 inch beam, and was built at Durban, Natal—truly a cosmopolitan craft—the more so when I mention that her owner, Mr. W. F. Diacono, is an Italian by birth. Be this as it may, I take pleasure in stating that both Mr. Diacono and his son are among the keenest votaries of the internal-combustion engine for marine purposes in Ceylon. It would be well for the sport there if there were more like this father and son. "Aida," for that is the name of the boat, is strong and serviceable, and has a canvas movable awning.

Several tea, rubber and other plantations are situated on small rivers which empty themselves into the sea at various parts of the coast, and in quite a number of cases shallow draft motor boats could be profitably employed in bringing the produce down to the coast for shipment. Native labor, however, is so cheap that in the past planters have preferred to make the fullest use of it, and much produce which could be far more expeditiously transported by means of motor craft is carried per medium of bullock wagons by far longer routes.

NAVAL ARCHITECTS & YACHT BROKERS



67′ x 12′ Cruiser

DESIGNED BY
MORRIS M. WHITAKER, N.A.
MOTOR BOAT SPECIALIST
Metropolitan Life Tower, New York City
Sketches submitted on receipt of your requirements

THEODORE D. WELLS
Naval Architect and Marine Engineer
32 Broadway, New York Tel. Broad 6737
A Specialty of Steam Yachts, Power Boats and Sailing Yachts.
Successor to H. C. WINTRINGHAM and WINTRINGHAM AND WELLS.

HENRY J. GIELOW
Engineer, Naval Architect and Broker
52 BROADWAY, NEW YORK, N. Y.
Telephones 4673 and 4674 Broad
ALEXANDER M. ORR, Jr., Manager of Brokerage Dept.
Plans, Specifications and Estimates furnished for all requirements. Description and Photos submitted upon receipt of inquiry.

R. M. HADDOCK
NAVAL ARCHITECT
Yachts of all classes designed, construction supervised, special attention to design of cruising and High-speed Power Yachts.
Tel. 445-W. 28 Clinton Place
NEW ROCHELLE, N. Y.

FREDERIC S. NOCK
NAVAL ARCHITECT AND YACHT BUILDER
MARINE RAILWAYS, STORAGE, REPAIRS
EAST GREENWICH RHODE ISLAND

CHARLES D. MOWER
Designs Furnished for Racing Cruising and Power Yachts of all types
NAVAL ARCHITECT
29 Broadway
Tel. 2953 Rector NEW YORK CITY

CARY SMITH & FERRIS
NAVAL ARCHITECTS AND ENGINEERS
Steamships, Steamboats, Lighters, Tugboats, Barges, Pilot Boats, Yachts, steam and sail, and Motorboats like Ailsa Craig.
90 WALL STREET - - NEW YORK CITY

WHITTELSEY & WHITTELSEY
Naval Architects and Marine Engineers
Specialists in the designing and superintending of the construction of steam and power propelled vessels.
11 Broadway, New York. 'Phone 4718 Rector

COX & STEVENS
Engineers, Naval Architects, Yacht Brokers
15 WILLIAM STREET NEW YORK CITY
Telephone 1375 Broad

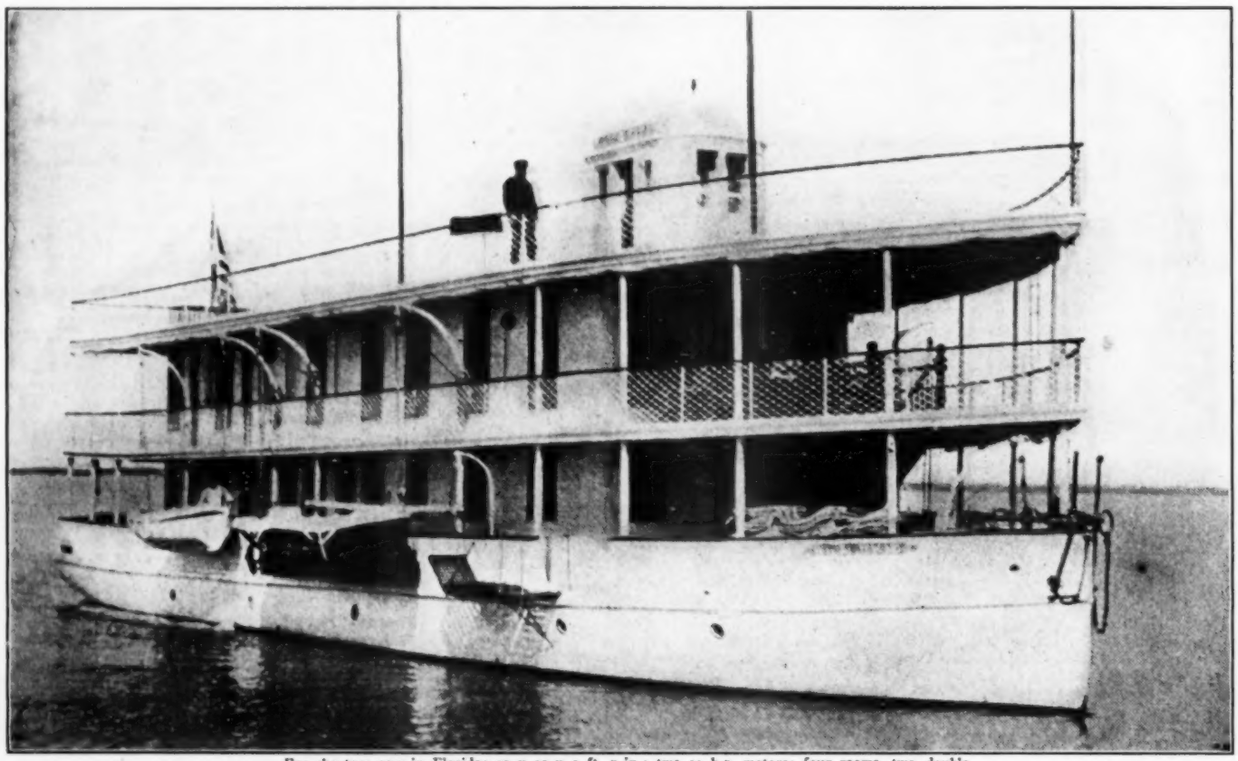
TAMS, LEMOINE & CRANE

52 PINE STREET, NEW YORK CITY

TELEPHONE 4510 JOHN

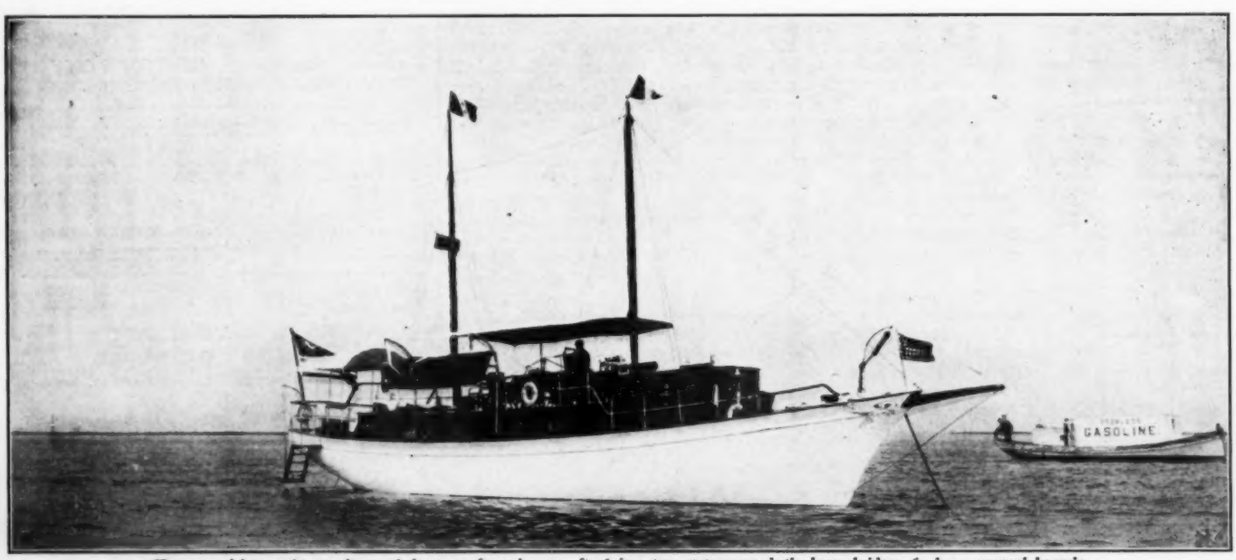
YACHT AND SHIP BROKERS. NAVAL ARCHITECTS AND MARINE ENGINEERS. MARINE INSURANCE

CORRESPONDENTS IN GREAT BRITAIN, MESSRS. G. L. WATSON & CO., GLASGOW



For charter; now in Florida; 90 x 23 x 2 ft. 7 in.; two 30 h.p. motors; four rooms, two double.
Please mention MOTOR BOATING.

42 x 38 x 8 ft. 6 in.; 25 h.p. motor; ideal day boat or tender to racing yacht; bargain.
Please mention MOTOR BOATING.



Heavy cruising yacht, 70 ft. x 56 ft. x 12 ft. 9 in. x 4 ft. 6 in.; two staterooms, bath, large bridge; 60 h.p.; unusual bargain.
Please mention MOTOR BOATING.

WHITTELSEY & WHITTELSEY

NAVAL ARCHITECTS, ENGINEERS AND YACHT BROKERS

Specialists in the designing and superintending of the construction of steam and power propelled vessels

Advise us fully as to your requirements and we will gladly furnish you with complete information

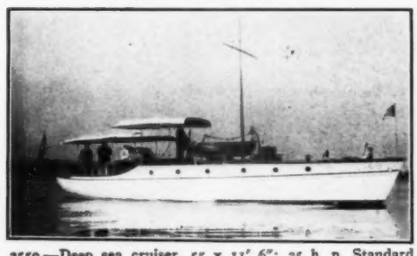
11 BROADWAY, NEW YORK CITY Telephone, 4718 Rector

2591.—70 x 13 x 2′ 9″, 50 h. p. Standard motor; sleep eight; completely equipped, exceptionally good condition.
Please mention MOTOR BOATING.

2330.—Speedy cruiser, 43 x 8, built 1909; 55 h. p. Sterling engine; sleep four; electric light, perfect condition.
Please mention MOTOR BOATING.

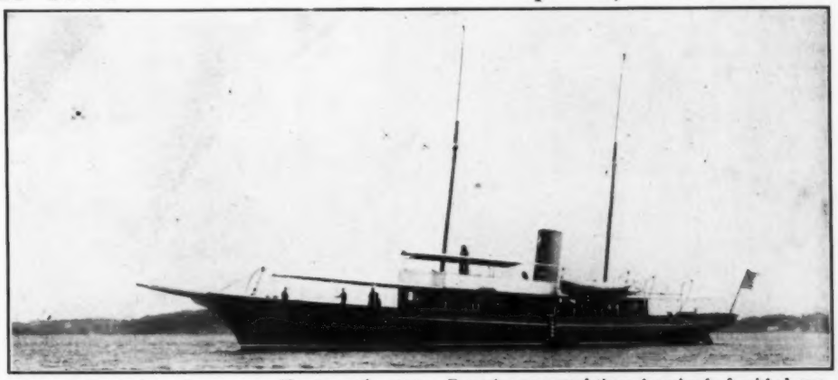
2587.—At sacrifice, 50 x 10 cruiser; 25 h. p. motor; electric light; very able, A1 condition; sleep five.
Please mention MOTOR BOATING.

2319.—Roomy cruiser, 40 x 10′ 6″; built 1908; 24 h. p. motor; fully equipped; price low.
Please mention MOTOR BOATING.

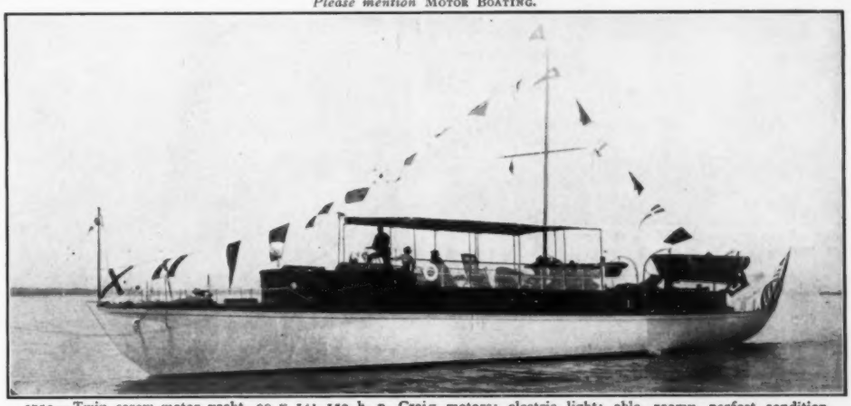


2559.—Deep sea cruiser, 55 x 11′ 6″; 25 h. p. Standard engine; double stateroom; roomy cabin; sleep six; price low.
Please mention MOTOR BOATING.

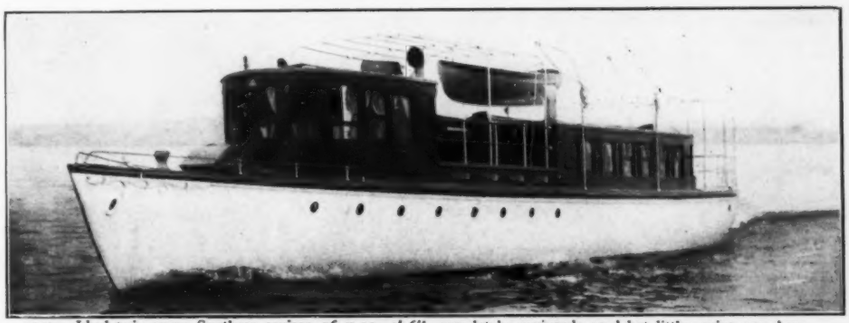
2328.—Stanch day cruiser, 42′ 6″ x 10′ 3″, 30 h. p. motor; speed 11 miles; cedar tender; outfit A1, excellent condition.
Please mention MOTOR BOATING.



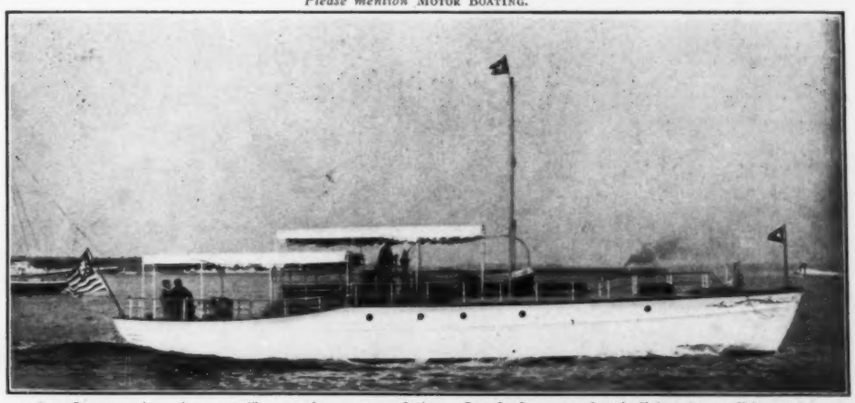
3260.—Steam yacht, 148 x 20; sacrifice to settle estate. Extensive accommodations; luxuriously furnished, perfect condition; speed 17 miles.
Please mention MOTOR BOATING.



2752.—Twin screw motor yacht, 90 x 14; 150 h. p. Craig motors; electric light; able, roomy, perfect condition.
Please mention MOTOR BOATING.



2797.—Ideal twin screw Southern cruiser, 76 x 12—3′ 6″, completely equipped; used but little; price very low.
Please mention MOTOR BOATING.



2584.—Ocean cruiser, 65 x 13′ 6″, extensive accommodations; Standard motor, electric light; A1 condition.
Please mention MOTOR BOATING.

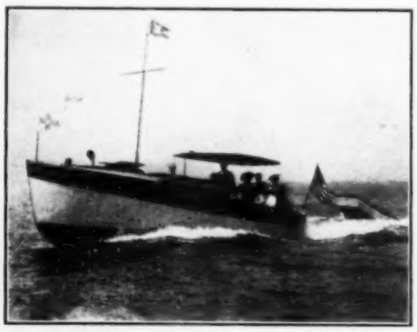
COX & STEVENS

15 William St., New York City

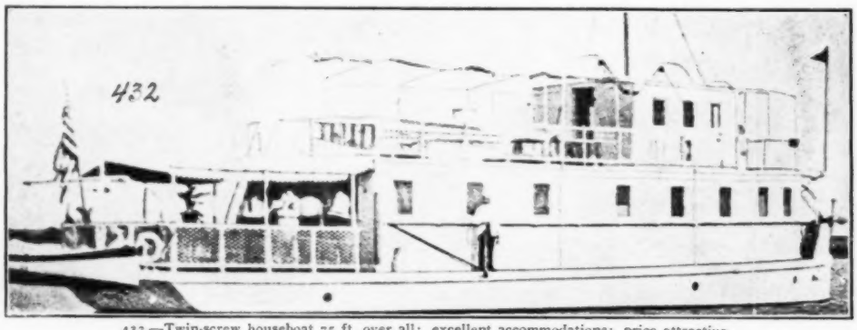
NAVAL ARCHITECTS, ENGINEERS, YACHT BROKERS

Offer first class yachts for purchase or charter. Complete particulars, plans and photographs promptly submitted on receipt of inquiry. State your requirements. Large list of yachts of all types for sale or charter.

1375 Broad — TELEPHONES — 5576 Broad



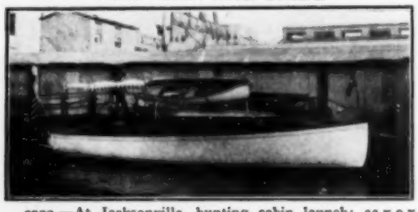
614.—Cruising launch; 36 x 32 x 7 ft. 6 in. x 2 ft. 8 in.; new 1909; sleeps four; price attractive.
Please mention MOTOR BOATING.



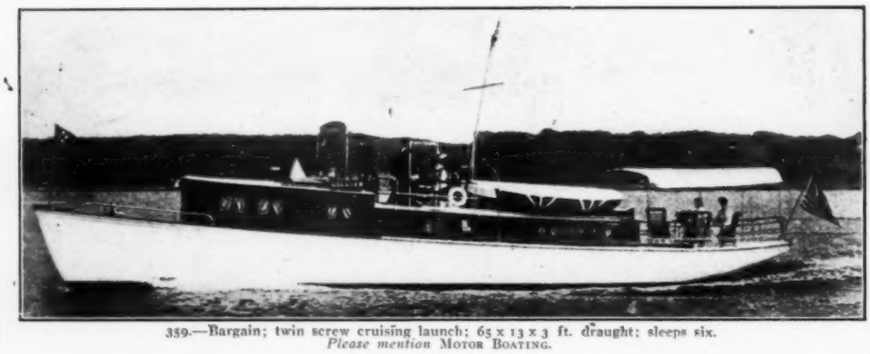
432.—Twin-screw houseboat 75 ft. over all; excellent accommodations; price attractive.
Please mention MOTOR BOATING.

605.—New 50 ft. raised deck cruiser; sleeps five; price very attractive.
Please mention MOTOR BOATING.

30.—Twin-screw power houseboat; 123 x 16 ft. 6 in. x 3 ft. 6 in. draught; price attractive.
Please mention MOTOR BOATING.



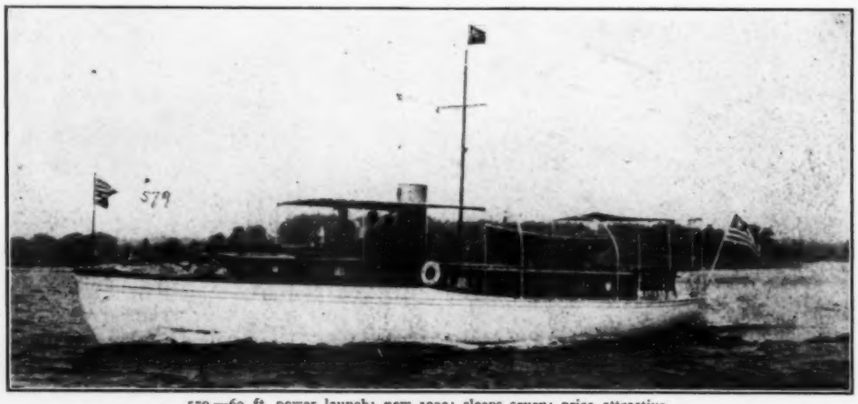
2000.—At Jacksonville, hunting cabin launch; 33 x 9 x 2 ft. 6 in. draught; launched 1907; bargain.
Please mention MOTOR BOATING.



359.—Bargain; twin screw cruising launch; 65 x 13 x 3 ft. draught; sleeps six.
Please mention MOTOR BOATING.

613.—Cruising launch; 45 x 40 x 9 x 3 ft. 4 in. draught; new 1909; excellent accommodations and speed.
Please mention MOTOR BOATING.

565.—Hunting cabin cruiser; 40 x 9 ft. 6 in. x 3 ft. draught; 20 h.p. Twentieth Century engine.
Please mention MOTOR BOATING.



579.—60 ft. power launch; new 1909; sleeps seven; price attractive.
Please mention MOTOR BOATING.

547.—Raised deck cruising launch; 40 x 9 x 3 ft.; sleeps four; price attractive.
Please mention MOTOR BOATING.

NAVAL ARCHITECT
ENGINEER
AND
BROKER

HENRY J. GIELOW

52 Broadway, New York

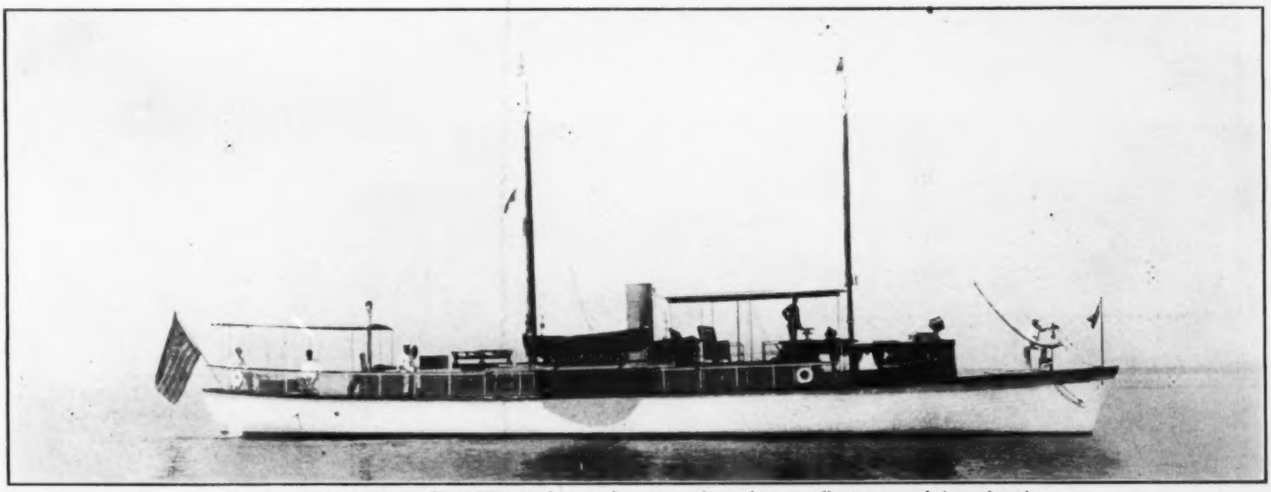
Telephone, 4673 Broad
Cable Address:
Crogie, New York
A. B. C. Code

ALEXANDER M. ORR, Jr., Manager of Brokerage Department

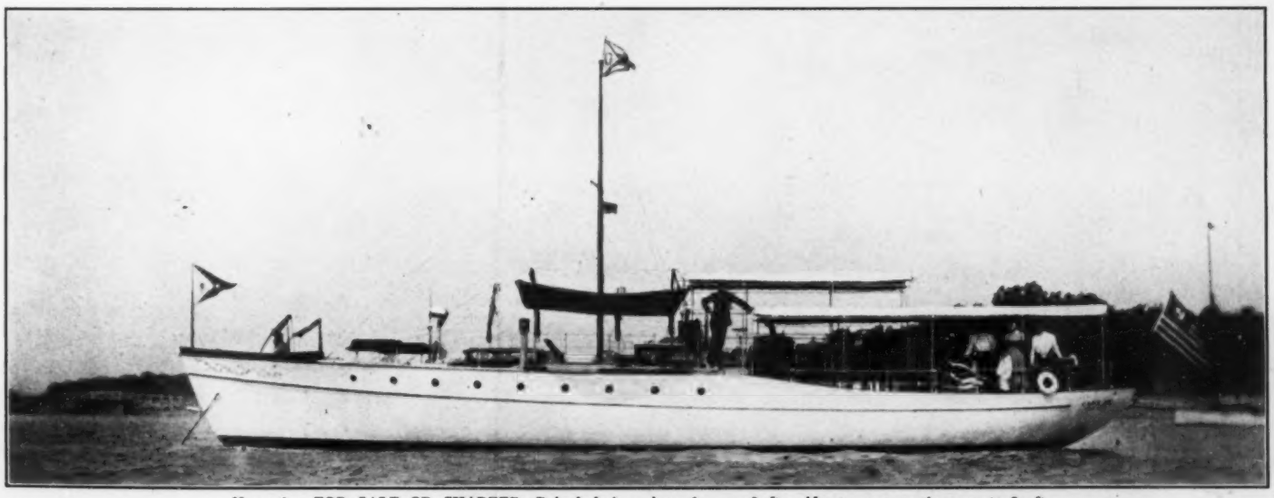
Plans, Specifications and Estimates Furnished for All Requirements, including High Speed and Cruising, Steam, Motor, Sail and Auxiliary Yachts; Houseboats and Commercial Vessels. Alterations Supervised.

Large List of American and European Yachts of All Types for Sale, Charter or Exchange; Commercial Vessels. Insurance. Descriptions and Photos submitted Upon Receipt of Inquiry.

No. 1365.—BARGAIN—Twin screw, 62 ft. x 12 ft., for cruising or day service; speed up to 14 miles.
Please mention MOTOR BOATING.



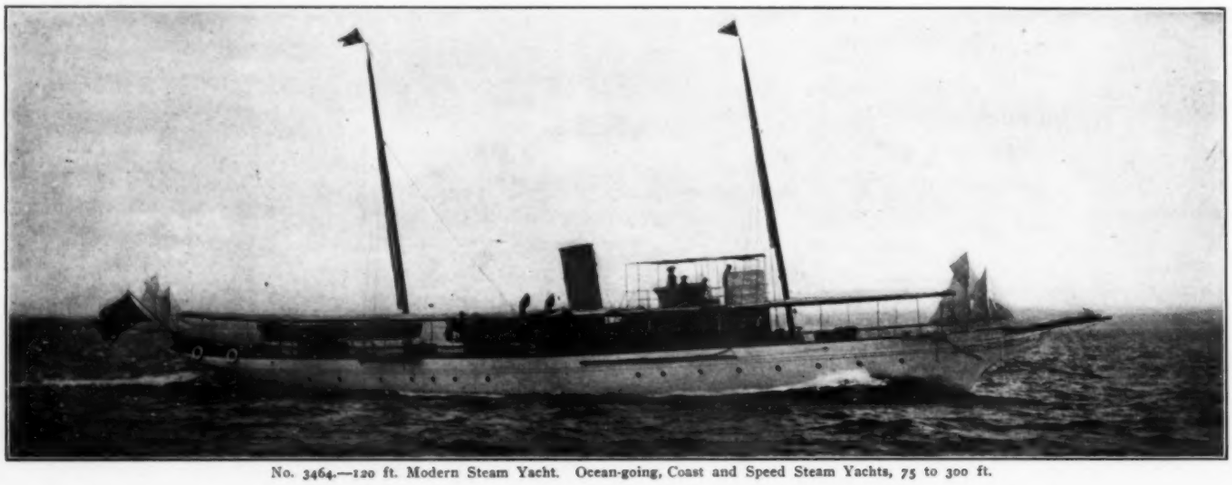
No. 1895.—FOR SALE OR CHARTER—85 ft. x 14 ft. motor yacht; 70 h.p.; excellent accommodations; bargain.
Please mention MOTOR BOATING.



No. 2760.—FOR SALE OR CHARTER—Raised deck cruiser, 65 x 13.8 ft. Also numerous others, 40 to 80 ft.
Please mention MOTOR BOATING.

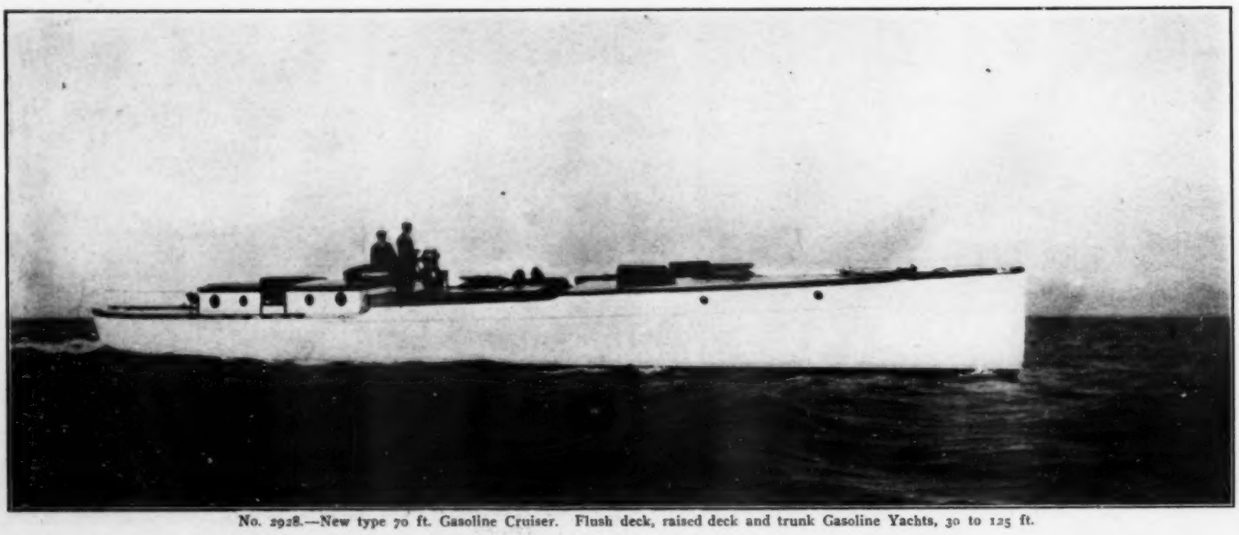
FRANK BOWNE JONES, *Yacht Agent*

High Class Yachts of All Types for Sale and Charter
Descriptions on Request. Marine Insurance at Special Rates
29 BROADWAY, NEW YORK **Telephone, 3099 Rector**



No. 3464.—120 ft. Modern Steam Yacht. Ocean-going, Coast and Speed Steam Yachts, 75 to 300 ft.

No. 2819.—105 ft. Power Houseboat. Houseboats, Auxiliaries and Cruisers for winter charter in Southern waters.



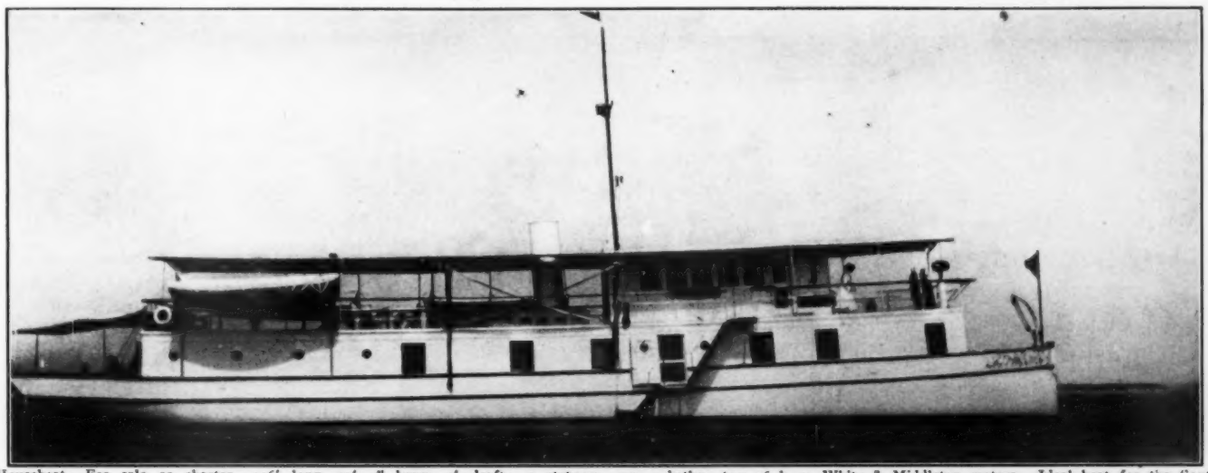
No. 2928.—New type 70 ft. Gasoline Cruiser. Flush deck, raised deck and trunk Gasoline Yachts, 30 to 125 ft.

A. J. McINTOSH YACHT AGENCY

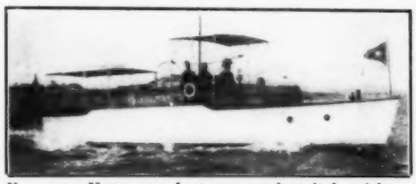
32 BROADWAY

Telephone, Broad 4886-4887 NEW YORK CITY

Brokers in all Types of Yachts of the Best Grade



Houseboat.—For sale or charter.—106′ long, 20′ 4″ beam, 3′ draft; 5 staterooms, 2 baths; two 36 h. p. White & Middleton motors. Ideal boat for the South. Thoroughly equipped. *Please mention* MOTOR BOATING.



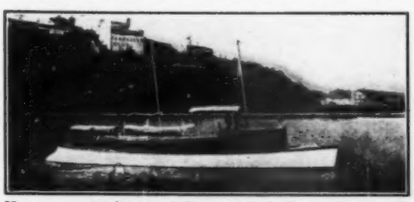
No. 1000.—New motor boat, not yet launched, 42′ long, 9′ 6″ beam, 3′ draft; with or without motor. Price is a bargain for a high-grade boat. *Please mention* MOTOR BOATING.

No. 6676.—63′ 6″ long, 10′ 8″ beam, 3′ draft; built 1905; two 32 h. p. Speedway motors; speed 12½ miles. In excellent condition. *Please mention* MOTOR BOATING.

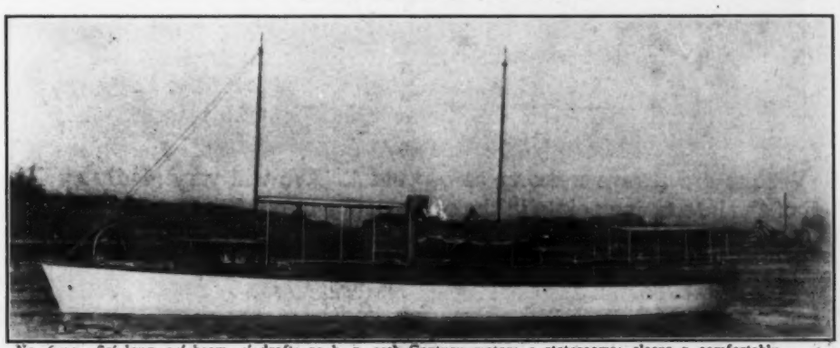
No. 8084.—60′ long, 11′ beam, 3′ 6″ draft; built 1907; two 25 h. p. Ralaco motors; speed 15 miles. *Please mention* MOTOR BOATING.

No. 440.—49′ long, 5′ 6″ beam, 2′ 3″ draft; built 1907; two 25 h. p. Auto-marine motors; speed 18 miles. Inspectable New York. *Please mention* MOTOR BOATING.

No. 7069.—57′ long, 12′ 6″ beam, 4′ draft; 24 h. p. Buffalo motor; electric lights; fully equipped for cruising; built 1908. *Please mention* MOTOR BOATING.



No. 9235.—65′ long, 12′ beam, 34″ draft; 25 h. p. 20th Century motor; lighted by electricity; very comfortable cruiser. *Please mention* MOTOR BOATING.



No. 6493.—85′ long, 14′ beam, 4′ draft; 70 h. p. 20th Century motor; 3 staterooms; sleeps 7 comfortably. *Please mention* MOTOR BOATING.

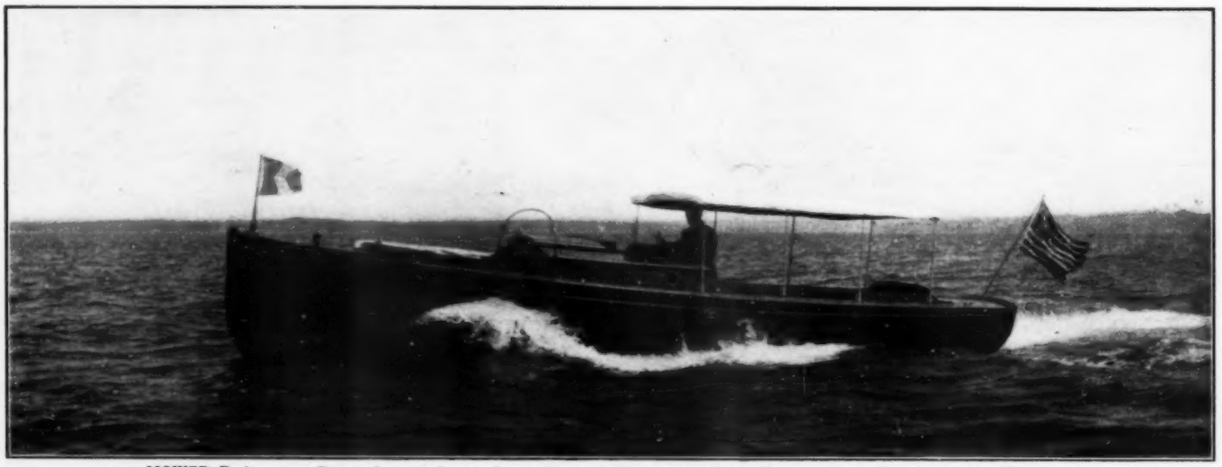
No. 484.—43′ long, 9′ 6″ beam, 2′ 10″ draft; built 1903; 16 h. p. Globe motor. Price $1600. Unusual bargain. *Please mention* MOTOR BOATING.

CHARLES D. MOWER

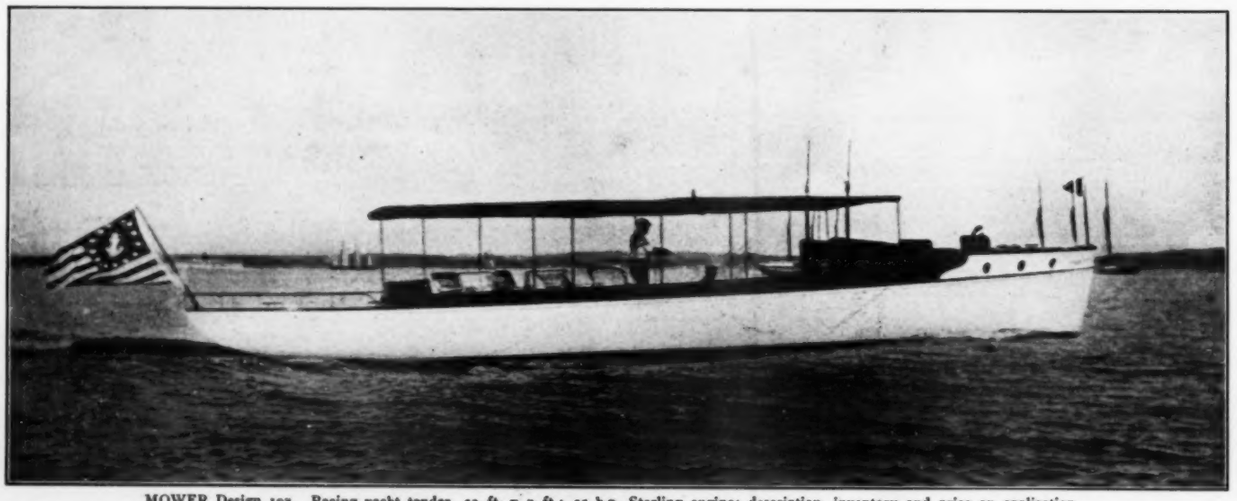
NAVAL ARCHITECT

Power Boats Designed to Meet Any Requirements. Contracts placed only with First Class Builders.

29 BROADWAY **Telephone 3953 Rector** **NEW YORK CITY**



MOWER Design 150. Day cruiser, 56 ft. x 9 ft.; 25 h.p. 20th Century; speed 12 miles; can be duplicated at reasonable price.
Please mention MOTOR BOATING.



MOWER Design 107. Racing yacht tender, 30 ft. x 7 ft.; 25 h.p. Sterling engine; description, inventory and price on application.
Please mention MOTOR BOATING.

MOWER Design 111. Double cabin cruiser, 50 ft. x 10 ft.; 25 h.p. Standard; fine deck room and good accommodations.
Please mention MOTOR BOATING.

IF YOU WANT TO BUY, SELL OR CHARTER A YACHT

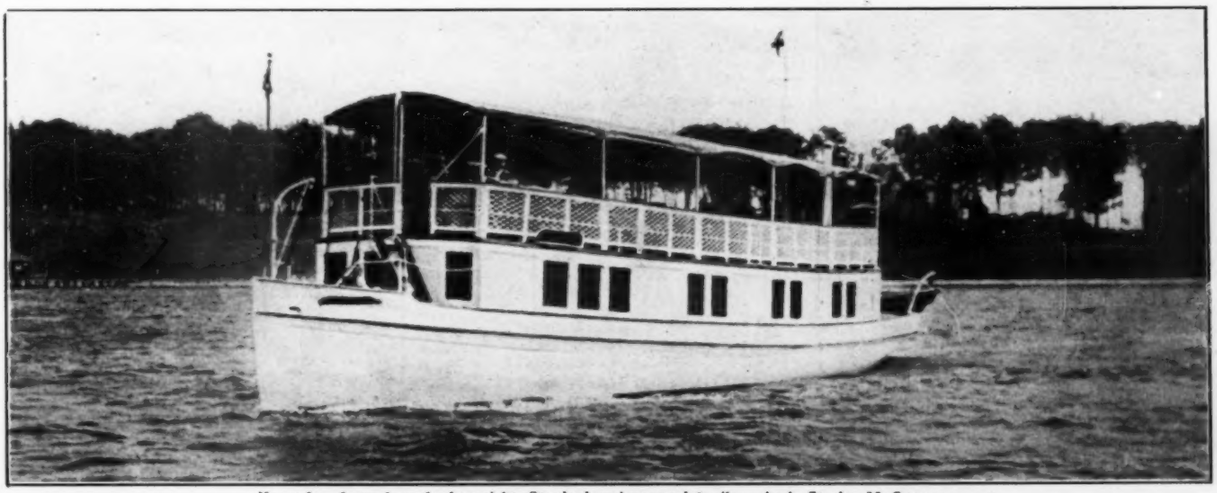
ANY SIZE OR TYPE

WRITE, CALL OR PHONE

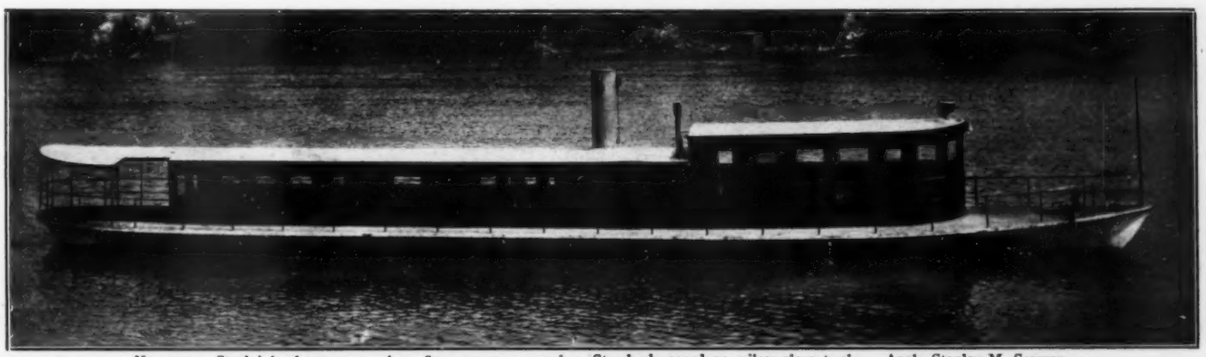
STANLEY M. SEAMAN

220 Broadway, New York 1200 Yachts Listed Phone, 3479 Cortlandt Cable, "Huntsea," N. Y.

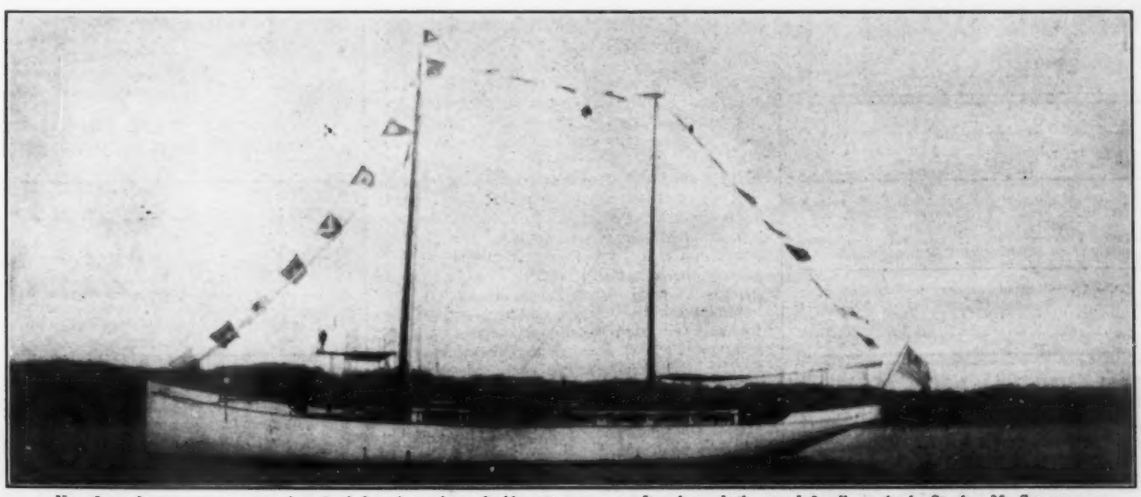
SHOAL DRAUGHT CRUISERS



No. 5260.—61 x 16 x 3.6; sleep eight; Standard engine; speed 8 miles. Apply Stanley M. Seaman.
Please mention MOTOR BOATING.



No. 5974.—Steel inland express cruiser, 87 x 11 x 2; 100 h.p. Standard; speed 15 miles; sleep twelve. Apply Stanley M. Seaman.
Please mention MOTOR BOATING.



No. 5873.—87 x 19 x 3.9; sea-going shoal draught cruiser; double staterooms; 20 ft. saloon; bath; speed 8 miles. Apply Stanley M. Seaman.
Please mention MOTOR BOATING.

MOTOR BOATS FOR SALE

The rate for "For Sale" advertisements is 3 cents per word. If an illustration is used the charge is as follows, which includes the making of the cut:

Cut one inch deep on one column $2
" two inches " " two columns $3
" three " " " three " $4

FOR SALE—Launch Messenger, 25 ft. x 6 ft., designed by Skene; small trunk cabin forward; Jager 2-cylinder, 4-cycle engine, 9 H. P.; electric lights, Apple dynamo, storage battery, toilet, fresnal lights, anchors, cushions, searchlight, copper tank; a high-class boat in first-class condition—$800. A. C. Needham, 10 High St., Boston.

FOR SALE.—At a sacrifice, 50-foot raised deck cruiser "EPH," 9-foot beam, 31-inch draft, speed about twelve miles, excellent construction, natural oak cabin, has stateroom, toilet with bath, commodious saloon, complete galley, motor beneath bridge deck, hull built by Truscott, motor six-cylinder Speedway. Now cruising south via Mississippi. Immediate delivery. Specifications on application.
TRUSCOTT BOAT MANUFACTURING CO.,
St. Joseph, Michigan.

BRUNS' BARGAINS.—Send for bargain list of high-class second-hand engines. Let us know what you are looking for. We may have it in stock. Bruns, Kimball & Co., 126 Liberty St., New York.

FOR SALE.—Nine hundred dollars will buy the finest cruising motor boat in the country for her size. Address J. W. King, Box 95, Croton on Hudson, N. Y.

FOR SALE.—A power houseboat, now in Florida. Has large saloon, three single and one double stateerooms. Bath has large tub and shower. Boat is splendidly constructed and no work is necessary to put her in shape for immediate occupancy. Has Standard Engine, 25 h. p., and can be run with two or three men. Owner going to Europe, will sacrifice. W. Roy Barnhill, 32 Brownell Street, Stapleton, S. I.

MOTOR BOATS WANTED

The rate for "Wanted" advertisements is 3 cents per word.

WANTED—Gasoline boat not less than 50 feet long, 10 feet beam; want a strictly day boat with cabin accommodations in case of bad weather; must be in first-class condition in every respect; give full description and state lowest price. Address B. B. R., MOTOR BOATING.

WANTED.—A cruising power boat with liberal cabin accommodations. Address, with full particulars, X. Y. Z., Box 2110, New York City.

MISCELLANEOUS WANTS

WANTED.—Marine (gasoline) engine salesman. Yearly contract. State experience. Address F. M. C., Motor Boating.

Motor Boat Openings.

CONSUL J. H. JOHNSON, of Swansea, Wales, calls attention to the newly created opportunity for the sale of American motor boats on the Welsh coast:

Motor boating has not been in favor in this district, though there are splendid facilities here for the use of such craft for pleasure. Swansea is centrally situated and two or three motor boats are used by private owners in cruising around Swansea Bay. Within close proximity several health resorts and artificial lakes have been constructed, but there are few boats seen on these lakes. Those tried experimentally have been well patronized, and the pastime promises to become a favorite recreation.

The Swansea (Valley) and the Swansea and Neath canals have for many years been of little use because of the splendid railroad facilities here. Horse-drawn barges, however, ply on these canals and carry coal from the collieries to local factories and take back timber for the mines. These canals often wind through beautiful stretches of country, wooded on either side, and a project is now afoot to arrange for motor boats to ply on them for both commercial and pleasure purposes. It is suggested that American motor-boat builders communicate with those in this district interested in boating in order to introduce their craft.

Moorings for Motor Boats.

(*Continued from page 45.*)

Usually when a man wants to anchor a motor boat it is a matter of some importance. A badly made connection with the anchor is likely to cast the anchor if nothing more. For those that do not know how, the following lesson will be useful.

Pass the end of the rope through the ring so as to make three turns, then pass the end over to the main part of the rope and through the turns just made. Next take the end and make a clove hitch about the main part of the rope. This hitch is shown in the accompanying illustration. It is easily made and prevents the rope from chafing off in the ring.

In British Columbia Waters.

(*Continued from page 13.*)

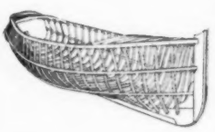
was corrected, however, before an appreciable distance had been traversed. An hour later we anchored in front of the hotel in Cowitchan Bay. Here another government inspector with lovely fluffy whiskers, boarded us to see that we carried no contraband. He had been in Cowitchan since '84 and knew the private history of all its residents. There is quite a colony of wealthy Englishmen who have built handsome homes to decorate their estates here. Among them is Lord Trunch, formerly very active in parliamentary affairs, who has over a thousand acres of preserve. Fluff and Larry went ashore to mail postals to their wives and sweethearts, while the skipper and I listened to the tales of the garrulous inspector and the splash of the salmon jumping in the twilight. This was our last day in British Columbia.

By six o'clock next morning I was up and had the anchor aboard unsolicited. Within sight the border line of Uncle Sam's dominions looked pretty good to me. We slipped unostentatiously by the pretentious houses where the afternoon before we had seen groups of well dressed people out on the verandas taking their tea or "peg"—according to sex. Through Satellite Channel, Colburn Passage, Prevost Passage and crossing Haro Straits Philistina plugged onward steadily. At 11 o'clock, with a beautiful breeze blowing, we took in the British ensign which had flown at our forward jackstaff throughout the trip, and substituted the United States union jack. With three rousing cheers we closed the log of our British Columbia experiences and started on the last stage of our homeward journey.

JAMES CRAIG
556 West 34th Street New York City
DESIGNER AND CONSTRUCTOR OF MARINE GASOLINE ENGINES AND SPECIAL MECHANISMS, SEVEN TO THREE HUNDRED HORSEPOWER

INSURE YOUR MOTOR BOAT
A day's delay may mean total loss. I specialize and can give you prompt and reliable protection at attractive rates.
RICHARD M. MONTGOMERY, JR.,
Fire, Marine and Liability Insurance
111 William Street, NEW YORK CITY

USE
HAVOLINE OIL
"It makes a difference."



MONITOR
K-D FRAMES
125 Sizes. All Types and Styles.
FREE BOOKLET.
Monitor Boat & Eng. Co.
Newark, N. J.

SAMSON TILLER ROPE
Solid braided cotton with center of bronze wire. Strong and durable, and will not stretch nor rust. Send for sample.
SAMSON CORDAGE WORKS, Boston, Mass.

Marine Water Closets
LAVATORIES, TANKS, Etc.
J. H. CURTISS CO.
2 South Street NEW YORK
Telephone 4840 Broad

ESSEX ENGINES
We build both a heavy and light-weight line, known respectively as *Essex Standard* and *Essex Special*. The latter retain both the efficiency and reliability of the heavier types. Let us tell you how Essex Marine Engines are guaranteed. *Write for booklet.*
ESSEX ENGINE CO.
416 Union Street, Lynn, Mass.
Bruns and Kimball, Inc., 126 Liberty St., New York, N.Y. and N. J. Sales Agents.

IDEAL SWITCHES
are the only positive self-locking Ignition Switches on the market.
Circulars on request.
IDEAL SWITCH COMPANY
PLAINVILLE, CONNECTICUT

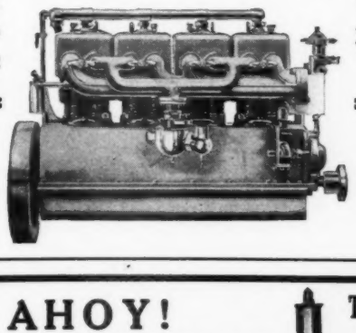
WILLIAM E. THOMAS & CO.
SPRAY HOODS
rass Frames and Fittings covered with government khaki duck. The best hoods on the market. Send for prices and catalogue
42 South Street, NEW YORK, N. Y. Telephone 1813 Broad

H.E. BOUCHER MFG. CO.
20 Fulton St., New York City
Inventions developed.
Marine Models a specialty.
Special Machinery designed and built.

SCRIPPS MOTORS

YOU pay no more for Scripps Motors than for engines listed at much lower prices. The difference is that when you buy the Scripps you pay for it and the transaction ends. With the cheap engine, the first cost is but the start of a long succession of repair bills, plus the annoyance and dissatisfaction of a faulty engine.

Get a Scripps and get rid of engine troubles. Hundreds of motor boat owners "who know" have decided this is the best way. Our catalog of four-cycle Scripps Motors, 1 to 6 cylinders, 4 to 100 H. P. will be sent to you on request



SCRIPPS MOTOR CO. 651 Lincoln Ave., Detroit, Mich.

AHOY! MOTOR BOATISTS

Trimount Rotary Whistle Blower

12.50 And Up

An entirely new device—a Rotary Blower driven by friction with fly-wheel of the engine. ***Does away with tanks. Tanks are dangerous.*** This Blower throws a large body of air and with our special Bell Whistle, makes a loud, clear tone. Can be heard at a great distance, and the blast is maintained as long as driving wheel of Blower is in contact with fly-wheel of engine. No variation or falling off in tone as with compressed air system. Made in three sizes.

This outfit is very simple, nothing to get out of order. Whistle can be placed on deck wherever desired and the pull can also be located in any part of the boat. Blower is made entirely of bronze and extremely durable.

Be sure it's a "Trimount"—when you buy

TRIMOUNT ROTARY POWER CO., Mfrs. 206 SUMMER ST. BOSTON, MASS.

TELEPHONE, 4000 CHELSEA

For Anything You Want Quick

FOR THE GALLEY, PANTRY, SIDEBOARD, OR FOR THE MOTOR

DELIVERIES FREE ALMOST EVERYWHERE

SIEGEL COOPER CO.

SIXTH AVENUE, NEW YORK

THE U. S. GOVERNMENT
USES
DOW SPARK COILS
ON ITS
SUBMARINE BOATS

Nothing is spared to make the Government Submarines Safer and More Reliable.

Life and death hangs upon the proper working of all systems.

The constant use of **DOW SPARK COILS** on the Submarines that have gone into active commission distinguishes them without possibility of dispute as **the Most Reliable, Most Efficient, Most Serviceable Coils Ever Made.**

Dow Coils Insure the Motorboat against Ignition Troubles.

DOW MFG. CO., Braintree, Mass.

ROPER Safety Propeller

Consider

Perfect Speed Control in either direction without touching throttle or spark. **Absolute Freedom from Engine Racing** under all conditions. **Ability to Control** the progress of your boat from any desired position. **The Sense of Security,** from knowing that your Gas Engine is as flexible as steam.

Then Place Your Order for a Propeller for the Coming Year.

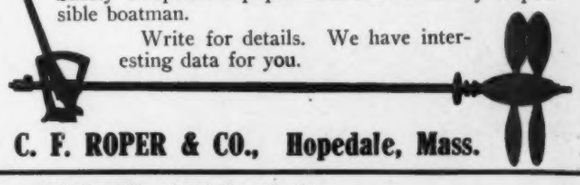
The Roper Safety Propeller is a combined Speed Controlling and Reversing Propeller. It is the *only* Safety Propeller made. It is the only propeller which guarantees perfect speed control.

The Roper Safety Propeller Bow Control

is the *only* device which gives speed controls from any part of the boat without taking throttle and spark controls forward. Acts similar to regular equipment. The equipment for the man who runs his boat alone. One easy throw of lever gives any desired speed in either direction.

An opportunity to test the claims of the Roper Safety Propeller Equipment is offered to any responsible boatman.

Write for details. We have interesting data for you.



C. F. ROPER & CO., Hopedale, Mass.

THIS IS AN EXACT CUT OF THE
B & B
Speed Wheel

Write at once for catalog for the lowest price of the best propeller wheel made.

with which we absolutely guarantee to increase the speed of any launch 1 to 3 miles per hour This is a bona fide guarantee, or we refund the amount paid. We have increased the speed of numerous launches saving fuel, etc. Why not yours? Our design of wheel has less percentage of slippage than any other propeller now on the market.

BRYANT & BERRY CO., 30 West Atwater St., DETROIT, MICH

ALUMINUM
BRASS —— BRONZE
CASTINGS
LARGEST PLANT IN U. S.
UNEQUALED FACILITIES
Low Freights. Let us quote on your requirements.
ALUMINUM FOUNDRY CO.
MANITOWOC, WIS.

Coates Garage Outfit For Drilling Grinding and Buffing
COATES CLIPPER MFG. CO.
Worcester, Mass.

WHISTLES
For Pleasure Craft For Commercial Boats
Powerful—Dependable—Automatic
A Never Failing Signal that Commands an Answer
Outfits $5 to $50 Write for Catalog, Signal Dept
GRAY-HAWLEY MFG. CO. Detroit, Mich.

BUY A
T & M MOTOR
and be happy
18 sizes—2 to 120 H. P.
Various types. Moderate prices. Beautiful catalog and general treatise free. We also have an accessory catalog.
Termaat & Monahan Co.
OSHKOSH, WIS.

The Famous
KING
MOTOR BOAT OIL
Will not carbonize A perfect lubricant
GREENSLADE OIL CO.
DETROIT, MICH.

Inland Route to Florida.

(*Continued from page 9.*)

berland Island and steer S.S.W. up Cumberland River. When off mouth of Brickhill River, steer for Shellbine Creek on opposite side. Gradually haul out to the middle until abreast of small sand island. Keep close in bend and pass old abandoned saw mill, then haul over to eastern side until abreast of low sand island. Now steer for mouth of Delaroche Creek on right hand side. Run the ranges and you are in Cumberland Sound. Steer S. ½ E. until you are abreast Kings Bay. Pass two small islands to port. Keep to Cumberland Island shore and steer for Quarantine Station, Fernandina.

If the weather is fine go outside 20 miles from bar to bar. If going through inside, get a pilot at Fernandina. The creeks are so crooked and there are so many of them that it is impossible to give any directions for going through.

Run up the St. Johns River. Follow the beacons and buoys to Jacksonville.

The following table gives the mileage of the various stages of the trip from New York to Jacksonville:

New York, Battery—New Brunswick	31.00
Delaware and Raritan Canal	44.00
Bordentown—Delaware City	60.00
Chesapeake and Delaware Canal	14.00
Chesapeake City to Norfolk	185.00
Norfolk—Deep Creek Lock	10.00
Dismal Swamp Canal	22.00
Canal to Wade Point Light	34.00
Wade Point—Harbor Island Light	85.00
Harbor Island Light—Beaufort	37.00
Beaufort Sea Buoy—Southport Sea Buoy	86.00
Southport Sea Buoy—Cape Romain Whistler	84.00
Cape Romain Whistler—Charleston Sea Buoy	30.00
Charleston—Savannah	135.00
Savannah—Fernandina	132.00
Fernandina—Jacksonville	42.00
New York to Jacksonville	1031.00

Laying Up Batteries.

(*Continued from page 23.*)

When the battery has been filled with water connect one of the cabin lamps across the terminals and slowly discharge until each cell shows about 1.0 volt. Screw in the vent caps and set the battery in an even temperature. All that remains in the spring is to replace the water with electrolytic acid and charge.

There are several storage batteries now on the market having the electrolytic in the form of a paste or semi-liquid. This cannot be removed. The only way to keep such a battery in condition is to slowly discharge until it shows about 1.7 V.—1.8 V. per cell and then put on a slow charge. It may be necessary to repeat this process two or three times during the lay-up.

Queen Mab.

(*Continued from page 38.*)

(10) Exide Battery P. V. No. 7 having a discharge of 18 amperes for four hours. All brackets fitted with Tungsten lamps, and the wiring throughout is enclosed in lead piping.

There is a uniform head room of 6 feet 4 inches over the entire floor space and between the deck and cabin roof beams there is an air space of several inches. These two factors are exceptional in a boat of this size and insure comfort in the tropics, in fact ventilation is the keynote of the design. In the main cabin there are two swing ports and in the engine room four on each side; the large stack and skylight also provide ventilation for the main cabin and the state-room is ventilated by four large oblong ports.

In exterior appearance Queen Mab is novel and strikingly original. The stem head is capped with a brass sleeve chock to give the chain a central lead. The sheer is set off with a heavy varnished half-round teak fender. The topsides are white over a light green underbody, the trunk cabin, skylights and hatches are finished in bright teak.

Queen Mab throughout from her solid paraffine ice chest to the Buchan crest on either bow reflects the individuality of her owner, and it is this fact quite as much as her construction or elegance of finish that makes her worthy of emulation.

WHY A
SINTZ
REVERSING
PROPELLER
is better than a Reverse Gear is very clearly explained in our booklet. In a Sintz you get strength, speed and absolute control. You banish bother and repairs. Write to-day for booklet and prices.
Wilmarth & Morman
617 Canal Street
GRAND RAPIDS, MICH.

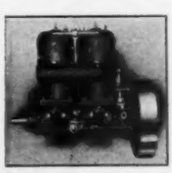
CAPE COD POWER DORY CO.
BOAT MANUFACTURERS
WRITE FOR CATALOG
WAREHAM, MASSACHUSETTS

CAVITO UNDERWATER EXHAUST
"The Best In the Bunch"
Makes boating a real pleasure by eliminating Noise! Smoke! and Smell! 1¼-in. Bronze, $4.50. 1½-in. Bronze, $5.50. All jobbers.
CAVITO UNDERWATER EXHAUST CO.
44 Ottawa St. Grand Rapids, Mich.

EISEMANN
HIGH TENSION SYSTEM MAGNETOS
Proven Perfect for Marine Motors
LAVALETTE & CO., 112-114 W. 42d ST., NEW YORK

Large photograph of this boat, with price, size, etc., will gladly be furnished upon request
Prompt delivery
Taunton Motor Boat Co.,
3 Washington Court Taunton, Mass.

STANLEY MARINE MOTOR
Our Motor Boat will spend the winter in Southern waters.
WILL GIVE DEMONSTRATIONS. WRITE US.
THE STANLEY CO.
79 Milk Street Boston, Mass.



THE SPRINGFIELD
Single and double cyl. heavy duty motors. Double and four cyl. speed motors. Two cycle, make and break or jump spark ignition.
SPRINGFIELD MOTOR CO.
Springfield, Mass.
Write for Catalogue.

BOATS
SEAMLESS STEEL
TANKS
TINNED & TESTED
JANNEY, STEINMETZ & CO. PHILA.
AUTOS
See our Exhibits both New York Shows.

VICTOR MARINE MOTORS
In 8 sizes, double and single cylinder. Perfect construction, reliable and powerful. Write for catalog.
6 H.P.
R. S. HILL, Sole Manfr.
26 E. Woodbridge St., Detroit, Mich.

UPSON-WALTON QUALITY

Everything in the Marine Hardware and Supply Line for Launches, Yachts and Motor Boats.

Catalogue with price list sent on request.

THE UPSON-WALTON CO.
ESTABLISHED 1871
CLEVELAND, OHIO

THAT DESIGN MEANS QUALITY

Whatever care, skill and precision will do we have done in making our

Amperes.

POCKET AMMETERS and VOLTMETERS

Let us send you a detailed description of our meters — you will then see why they are just what you want.

HOYT ELECTRICAL INSTRUMENT WORKS
PENACOOK, N. H

SEND FOR LITERATURE

STORES AND OFFICES TO LEASE
NEW YORK AMERICAN BUILDING

Broadway—Columbus Circle—Eighth Ave.—58th Street
The Hub of the Automobile District

Building particularly adapted for Automobile Showrooms—Tire People—Motor Boat Sundries—Advertising Agencies, etc. More Motorists pass this building than any other in Greater New York—Every Office Fronts on Street, Circle or Avenue—Unlimited opportunities for signs and advertising—Building entirely modernized and renovated under supervision of Kirby, Pettit & Green, Architects. Rent includes heat, light and service.

Apply on Premises or

HUBERTH & GABEL, Agents
147 Fourth Ave., cor. 14th St.
New York City

or your own Broker.

Holmes

The MOST POWERFUL, REFINED and DURABLE engine made

25 H.P. with Dual Ignition

The Engine that "speaks for itself." After a long, hard season's work as good as new. Cranks are more than half the diameter of the cylinder. The real "Get-at-able" Long Stroke Machine.

SEND FOR NEW LOOSE LEAF CATALOG

The Holmes Motor Co., West Mystic, Conn.

AGENTS: J. M. ARTHUR & CO., Portland, Oregon. W. S. FERGUSON, P. O. Box 644, St. Louis, Mo. HARRISON M. REED, South Jacksonville, Fla. No. 1 Madison Avenue, New York.

ATLANTIC CO.
AMESBURY, MASS.
Boston Office, 93 Haverhill St.

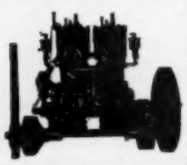
Famous Gurnet Dories, 18 to 25 ft. inclusive. Fast launches. Famous Atlantic Motors. Excellent sprayhoods of all types. Specify requirements in asking for catalogue.

Shawmut Spark Plugs

have been tested under the most difficult and trying conditions, and have proven universally satisfactory. Price - - - - - - - - **$1.00**

BLAKE ELECTRICAL CO.
BOSTON, MASS.

We design to order and build high grade boats of any desired type and any speed. We make a study of turning out only the kind of boats that will stand to advantage any comparison with any other boats made. Send ten cents for catalogue G. BATH MARINE CONSTRUCTION CO., Bath, Me.



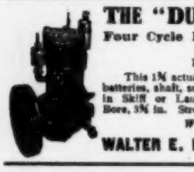
The A. A. ADAMS Marine Engine

An unusually reliable, high class motor at a low price. Good agents wanted—liberal discounts.

10-14 H. P., Double Cylinder
$210.00
2-Year Guarantee.

Write for catalogue to-day.

A. A. ADAMS & CO.
384 Fountain St., Providence, R. I.



THE "DUNN" MARINE MOTOR

Four Cycle Reversible Outfit Complete **$42.50**

ENGINE ONLY, $33

This 1M actual h.p. Four Cycle Motor, with best coil, batteries, shaft, screw and muffler, tested, ready to install in Skiff or Launch. Weight of motor, 80 pounds. Bore, 3¾ in. Stroke, 4 in.

Write for Catalog "G."

WALTER E. DUNN - Ogdensburg, N. Y.

Watres Whistle—the whistle of efficiency—deep toned and powerful. Send for booklet.

WATRES MANUFACTURING CO.
1127 D Broadway, New York

What Constitutes a Good Marine Motor

If you wish to know in detail what constitutes the standard for a strong, simple, reliable, medium-weight marine motor, built for long and hard service, you should examine the very informing, 48-page, descriptive Catalogue of the world-known Knox Marine Engines.

It's Free—Send for It To-day

We also build all kinds of quality Motor Boats up to 60 feet. Our Catalogue describes and pictures them.

CAMDEN ANCHOR-ROCKLAND MACHINE CO., CAMDEN, MAINE.

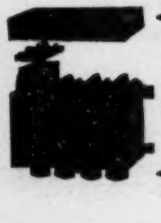
EJECTOR MUFFLERS

will silence your motor without loss of power. Specially constructed to prevent rust and to allow water to be run through the exhaust pipe. Six years' use have proven their superiority.

OVER 50,000 IN USE

MOTOR & MFG. WORKS CO.
GENEVA, N. Y. "Dept. E"

Agents: Atlantic-Maritime Co., Boston & Gloucester; Henry Keidel Co., Baltimore, Md.; C. L. Newman, Halifax, N. S.; C. D. Callahan, San Pedro, Cal.



Cartridge Ignition Coils

Save you 90% of your coil repairs

Follow the arrows to the greatest improvements of the year.

CARTRIDGE COIL CO.
41 Mechanics St., Lafayette, Ind.

Talks With Our Naval Architects.

(*Continued from page 18.*)

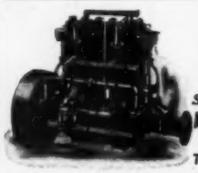
greater than what is necessary for strength, to resist corrosion.

The so-called raised deck type of boat seems to have taken the popular fancy, although there is a tendency to modify it by the addition of trunk houses in order to secure better light and ventilation to the living quarters. The raised deck type naturally lends itself well to strength and seaworthiness, but these requirements can be equally well met by a modification of the sheer line and the addition of a low trunk cabin which will give better ventilation. For boats under 40 feet, the raised deck type gives a stumpy appearance because nearly all owners require full head room, but a combination of a raised deck and trunk cabin overcomes this effect.

In the smaller boats, the single screw is preferable because the given power divided in two units requires propellers of such small diameter that the boat loses its efficiency in a seaway very quickly, and while the designed speed can be maintained without difficulty in smooth water, it drops excessively if the boat happens to be caught in heavy weather.

In the medium sized boats, say from 60 to 80 feet, the twin screw propulsion is better, especially where it is necessary to keep the draft moderately light for service in Florida and other shoal waters.

In boats of the largest sizes, the triple screw offers the greatest advantages as it is possible to have three speeds with motor economy. With the center engine in use and the wing engines idle, the center motor can be run at its maximum efficiency and give a low cruising speed; with the center engine idle and the wing engines in use, another economical cruising speed can be reached, and with all three engines in use the maximum speed can also be obtained economically. Of course the cost of fuel with gasoline would be higher than that of steam, but it must be remembered that the gasoline engine uses fuel only when in motion and does not require the constant attention necessary with the steam plant. The first cost of the machinery also makes it an object to use gasoline as a fuel. Producer gas, kerosene and crude oil are factors of the near future, but they have not yet been sufficiently developed to recommend them to the average owner."



RELIABLE SERVICEABLE ECONOMICAL

Send for descriptive Catalog

Ask any of our many customers

SAGAMORE ENGINE CO.
74 to 78 Sagamore Street, LYNN, MASS

ORSWELL IGNITION

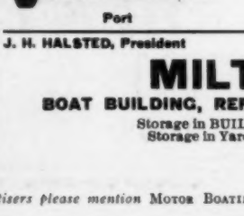
A jump spark that is absolutely

MOISTURE, HEAT, and **WATERPROOF**

Plug and Coil combined

New and Improved Patterns for 1909

ORSWELL IGNITER CO., 192 Commercial St., BOSTON, MASS
NEW YORK SALESROOM—136 Liberty Street—F. P. CONRAD, Mgr.



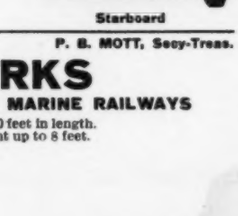
Port

Why a DOMAN? Ask an Owner

"The Motor of Quality"

We have been building the "Domans" four cycle marine motors and engines for the last 12 years. They are built in sizes from 5 to 200 H. P., 2 to 8 cylinder. If you are looking for an absolutely reliable outfit to propel your boat, send for our 1910 catalog, which gives full information of what we make.

The H. C. Doman Co., Dept. "F," Oshkosh, Wis., U. S. A.
The High grade engine builders
Seattle Stock Branch: 72 Jackson Street



Starboard

J. H. HALSTED, President — S. B. GEDNEY, Vice-President — P. B. MOTT, Secy-Treas.

MILTON BOAT WORKS

BOAT BUILDING, REPAIRING, STORAGE AND SUPPLIES. MARINE RAILWAYS

Storage in BUILDING (weather proof) 15c per foot per month; up to 50 feet in length.
Storage in Yards (covered with heavy canvas covers) $15 up. Draught up to 8 feet.

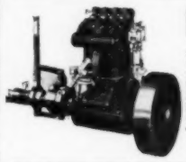
Engage berths in our Storage Buildings early.

RYE, NEW YORK

DON'T DISCARD BROKEN PARTS

Have them welded together by the Oxy-Acetylene Process. Steel, Cast Iron, Bronze, Copper, Aluminum and all other metals can be welded. Manufacturing quoted on. Welding equipments for repair shops or large plants supplied.

Autogenous Welding Equipment Company
41 Bay Street, Springfield, Mass.



FRISBIE MOTOR Four-Cycle marine engines of medium weight, distinguished for simplicity, economy and extreme dependability. Severe and continued service in pleasure and working boats has proved them second to none. Also special light motors for auto boats. Handsome catalogue free. WRITE TODAY.

The Frisbie-Heft Motor Co.
Middletown, Conn.

MARINE HARDWARE

Yacht and Motor Boat Fittings

A. S. MORSS CO.
222 Commercial Street, Boston, Mass.

GOVERNMENT INSPECTOR GENERAL

approves the O'Brien Electric Whistle for motor boats, price $8.50 with 25 ft. of wire and push button. Operated at any point by push buttons, run on a few ordinary dry batteries or storage battery. Send for catalogue on electric whistles, searchlights, dynamos, etc.

THE EDGAR MFG. CO.,
22 Kast Bldg., Boston, Mass.

WM. H. WILKINSON CO.

Manufacturers of

OILING DEVICES for GAS ENGINES

West Medway, Mass.

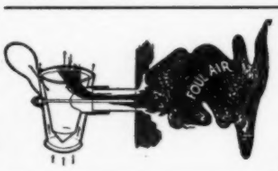
TOPPAN POWER DORIES & MOTORS

Safe. Best Sea Boat Built. $125 up. Send 4c. in Stamps for Catalog.

KNOCK DOWN DORIES, EASY TO BUILD

Send for free circular and prices.

Toppan Boat Mfg. Co., 21 Haverhill St., Boston, Mass.



PURE AIR

Ventilation in Your Boat
Guarantee Against Explosion
Send for Descriptive Circular

AUTOFORCE
VENTILATING SYSTEM
BOSTON, - MASS.

BLOW YOUR WHISTLE WITH PURE AIR
BY USING
Dixie Air Compressor
:: :: *WRITE FOR BOOKLET* :: ::
JOHN H. THOMPSON & CO.
650 Woodward Ave., :: :: Detroit, Mich.

REFINED MOTORS

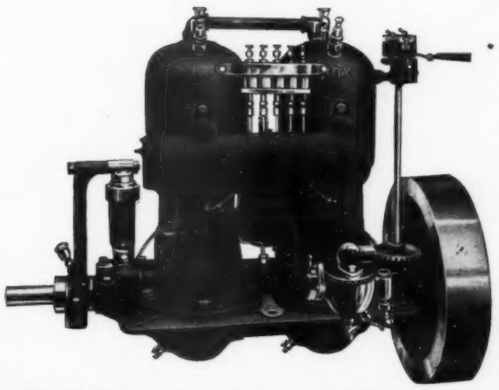
MANUFACTURED BY

THRALL MOTOR CO.
46 Fort St., East Detroit, Mich.

Pittsburg to Cincinnati, 466 Miles
1554 Miles Cincinnati to New Orleans

Br'er Fox II. on her record-breaking runs proves the

Endurance of Fox Motors



Boat Builders, Dealers, Jobbers, Agents

DON'T FAIL TO GET OUR PROPOSITION BEFORE DECIDING WHAT MOTORS YOU WILL USE IN 1910.

The Fox Reversible Gasoline Engine Co.
262 Front Street, "South Cincinnati," Newport, Ky.

BOSTON'S

NATIONAL

MOTOR BOAT AND ENGINE SHOW

UNDER AUSPICES

New England Engine and Boat Asso.

MECHANICS HALL : January 22nd to 29th, 1910

The only Eastern Show recognized by
National Association of Engine and Boat Manufacturers

Bigger and Better than Ever

Space being rapidly taken Write for Application Blanks

Address all communications and applications to
CHESTER I. CAMPBELL, Gen. Manager
Executive Offices, 5 Park Square
BOSTON, MASS.

FERRO WINS

3 Gold Medals in Seattle

THE Award Commission of the Alaska-Pacific Exposition has officially recognized the Ferro as the World's standard two-cycle motor.

They awarded this engine the gold medal, first grand prize for two-cycle engines, and a silver medal, second prize for heavy duty engines, (first prize won by the Standard.)

The Ferro Reverse Gear received the gold medal for reversing mechanisms.

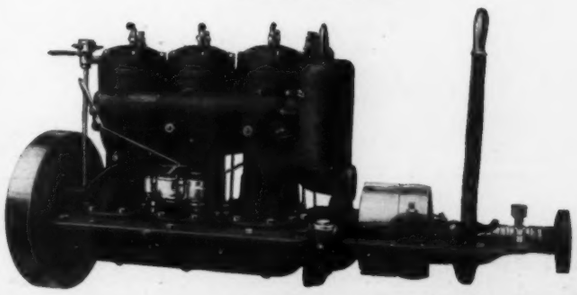
The entire exhibit of Ferro engines and marine accessories in charge of the Seattle Marine Supply Co. also took a gold medal.

There's a reason for Ferro mechanical perfection and operating reliability. The reason is perfect design, high grade materials, and accurate skilled workmanship.

Ferro engines embody the successful mechanical improvements of the best automobile engines—including offset cylinder, accessible parts, positive pressure oiling, adjustable bearings, effective ignition—jump spark and make and break,—and others.

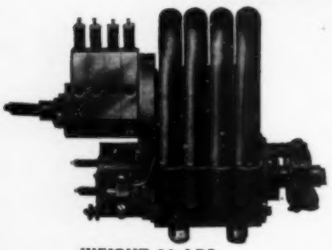
THE FERRO MACHINE & FOUNDRY CO
Largest Marine Engine Builders in the World
Main Offices—790 Superior Ave., Cleveland, O.
New York Office—44 Cortlandt St., 2nd Floor

Agents and Distributors in all principal cities and ports



The Ferro is the World's Standard Two-Cycle Marine Motor

HEINZE NEW MAGNETO



WEIGHT 20 LBS.

LOW TENSION WITH HIGH TENSION DISTRIBUTOR

will generate a large spark firing charges positively when cranked or running at a low speed.

At 50 R. P. M. will produce a 3/8" spark.

At 1,000 R. P. M. the primary voltage is 6.8.

Its short circuit currents amount to 5.7 amperes.

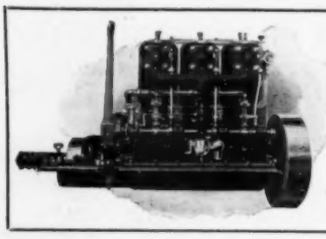
All parts are waterproof.

Let us send you Catalog 8, giving full information.

HEINZE ELECTRIC COMPANY **LOWELL, MASSACHUSETTS**

"WHITE" MOTOR & PADDLING CANOES are made of the best cedar, ribs and planking covered with canvas; spruce gunwales, white ash or oak stems and thwarts and brassbang plates. The seams are beveled and lapped, making a smooth water-tight canoe, even before the canvas is put on. No cracks, no swelling or shrinking and the result is a stiff, strong, durable canoe Ask for our descriptive booklet.

E. M. WHITE & CO.
OLDTOWN - MAINE

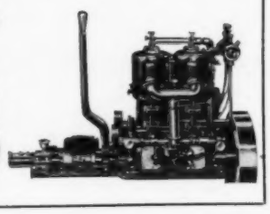


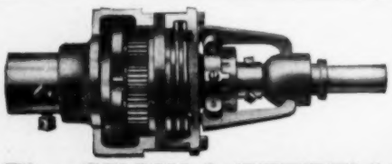
Palmer Motors and Launches

Two and Four Cycle. One, Two and Four Cylinder. Stationary and Marine. One to Thirty H.P. Catalogue FREE.

PALMER BROS., Cos Cob, Conn.

New York: 31 E. 21st St. Philadelphia: The Bourse. Boston: 85 Union St. Providence, R I.: 242 Eddy St. Portland, Me.: Portland Pier. Seattle, Wash.: 526 First Ave., So. Vancouver, B. C.: 1600 Powell St. **Send for our 1910 Catalogues**





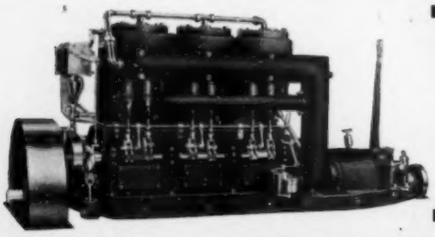
THE GEAR THAT MAKES JOE FAMOUS

1910 Model Now Ready—Send for Advance Circular

INSIDE FACTS: Multiple Disc Friction that won't slip.
Three slow running steel gears that do not Grumble on reverse.

Joe's Improved Reversing and One-Way Clutches

The SNOW & PETRELLI MANUFACTURING CO., 445 Chapel St., New Haven, Conn.



Kerosene-Gasoline Marine Engines

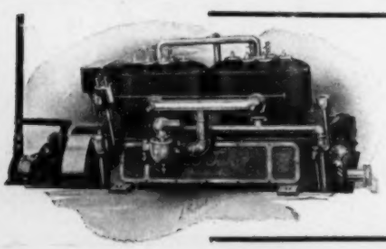
5 TO 100 H. P.—4 CYCLE

WHAT OTHERS SAY:—

Am now in winter quarters at Tenekee Springs, Alaska I was out of gasoline three months ago and could not get a drop for love or money for two months, but I could get kerosene and I burned kerosene all of two months in my "Wolverine" engine. Had just 1½ gallons of naphtha to start with. Remember I am among floating ice right along and have been in very rough weather, in fact dirty weather, but my engine never failed me.

WOLVERINE MOTOR WORKS

Catalog No. 53 Free Upon Request BRIDGEPORT, CONN., U. S. A.



I STAND BACK OF MY ENGINES

H. L. F. TREBERT GASOLINE ENGINES

Are sold under a Positive Guarantee

Your money back if you are not satisfied in *every* respect. You'll find no weak parts or excessive gearing. All parts are easily accessible and not a moving part is exposed. My engines are DURABLE, RELIABLE, ECONOMICAL, and FREE FROM VIBRATION.

10-18 H. P., 2 Cylinder 4 Cycle
17-45 H. P., 4 Cylinder 4 Cycle
35-60 H. P., 6 Cylinder 4 Cycle
} All same bore and stroke

Convincing Catalogue on Request

H. L. F. TREBERT, 407 St. Paul Street, ROCHESTER, N. Y.

When writing to advertisers please mention MOTOR BOATING, *the National Magazine of Motor Boating.*

PYRAMID ALUMINUM

The Ideal Floor Cover for Motor Boats

or any purpose requiring a clean, durable, sanitary floor, will not tarnish, discolor or corrode and is practically indestructible and ever-lasting. Write today for descriptive circular and prices.

FACTORY SALES CORPORATION

1434 MICHIGAN AVENUE : : : : : : : : : CHICAGO, ILL.

NOW IS THE TIME

TO PLACE ORDERS FOR

YACHTS

AND

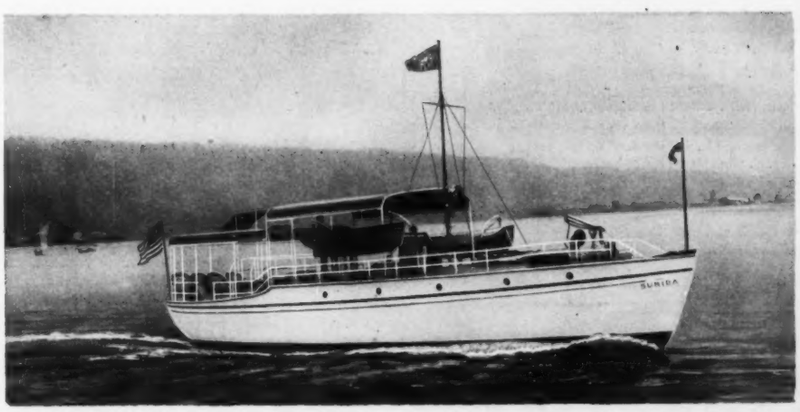
LAUNCHES

FOR SOUTHERN SERVICE

Plans, Specifications and Prices submitted for any size or style Steam or Auxiliary Yacht or Motor Boat

SPEEDWAY GASOLINE MARINE MOTORS

4 Cycle Type — 8 to 150 Horse Power in stock



GAS ENGINE & POWER CO.,

AND

CHARLES L. SEABURY & CO.

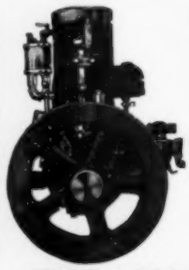
(CONSOLIDATED)

MORRIS HEIGHTS, NEW YORK CITY

Designers and Constructors of High Class Craft of all Sizes and Styles for Pleasure or Commercial Service

"SEABURY" WATER TUBE BOILERS AND MARINE STEAM ENGINES

THE ONLY NAPHTHA LAUNCH *Send 10c. for NEW CATALOG*



1910 MIANUS

GENERATES ITS OWN ELECTRICITY
NO BATTERY : NO SPARK COIL

Increased Power and Reliability

Nickel Steel Forgings, Ground Cylinders
Water Cooled Exhaust

THIRTEEN YEARS' EXPERIENCE
THOUSANDS IN OPERATION

Sizes 3 to 15 H. P.

THE MIANUS MOTOR WORKS

Main Office and Factory MIANUS, CONN.

BRANCHES: New York City—76 Front Street; Boston—12 Commercial Wharf; Portland, Me.—29 Portland Pier; Providence—142 Dorrance Street; Newark, N. J.—128 Front Street; Philadelphia—Bourse Building; St. John, N. B.—29 Nelson Street.

Guaranteed not to be taken from your cylinder for the entire year

Others may be easy to clean

You don't have to clean this one

Mica only **$1.50**

Don't this look good?

See the Inner Shell

See the Sharp Nose

Send for Catalog of IGNITION Goods

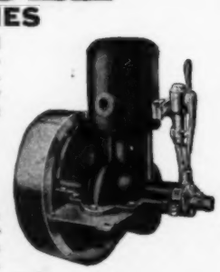
The National Steel Products Co.,

225 to 227 Broadway
Lorain, Ohio

—BELLE ISLE—

MARINE ENGINES

The simplest, staunchest, swiftest, most powerful and efficient 2-cycle engine of its size built. Perfect and refined in every detail. Makes speedy launch out of ordinary canoe, row boat, skiff, yacht tender. Great for hunting, fishing and flat-bottom boats, and 14 to 20 feet speed launches.



2 Actual H. P. Bare Engine $23

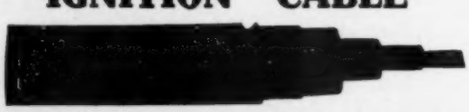
Complete Engine with Accessories and Fresh Water Boat Fittings, $42.00. Salt Water Boat Fittings, $4.00 extra.

Anyone can install and run. Compact, strong, durable, reliable, reversible, economical, safe. We also make up to 16 H. P., one and two cylinders. Sold direct from factory to user. Fully guaranteed. 30 days approval. Prompt shipment. Order now.

NEW BELLE ISLE MOTOR CO., 12 Motor Boat Lane, Detroit, Mich.

Packard

IGNITION CABLE



Is the Acknowledged World's Standard

IT NEVER FAILS

THE PACKARD ELECTRIC CO., 322 Dana Ave., Warren, O.

Read This Free Book Before Equipping Your Boat

Send to-day for a free copy of this book. It contains more information than has ever been printed before on the subject of electric lighting for motor boats. You should read it carefully before equipping your boat for next season. Sit down and write for a copy to-day; you will find it interesting and profitable.

The Dayton Electrical Mfg. Co.

Largest Manufacturers of Ignition Apparatus in the U.S.

188 St. Clair St. Dayton, Ohio

"THE DESMOND WAY"

IS UNCLE SAM'S WAY

Cheapest Way To Get Your Motor Boat

SCIENTIFIC—ACCURATE
VERY ECONOMICAL—NEW IDEA

Five Thousand Boats Turned Out

Enables you to build safely by yourself, by K D frame or by Boatbuilders. An innovation on solid lines. Will gladly answer all questions. Send for our plain commonsense story and catalogue 55.

THE DESMOND CO., Tarrytown-on-Hudson, N.Y.

When You Pull Your Boat Out

Fitting-up Time is approaching. The end of the season is a more practical time, in many ways, than the beginning.

Get your boat in perfect trim for next year. You know *now* just what she needs. *Before you forget,* visit

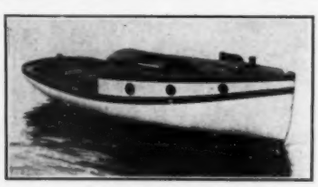
Hopkins

Here you are assured of the utmost in proper equipment. And at prices *nearer manufacturing cost* than anywhere else.

Handsome illustrated Motor Boat Book, containing 1,500 illustrations and beautiful color plates, sent free on request. Write for your copy today.

Our splendid mail order system affords great economy and perfect service to out-of-town owners

John C. Hopkins & Co. 119 Chambers St. New York



Here is an exceptionally able Cruiser for smooth or rough water—at a low price.

¶ It comes in these lengths, 20, 22, 26 and 35 feet, and is thoroughly representative in every detail of the policy of this company, our aim being to produce *better* Power Boats than can be had anywhere else—boats combining *strength, beauty and sea going qualities* to a hitherto unexampled degree.

¶ We build both boats and engines, and fit the latter to the former as you would fit a glove. Perfect satisfaction can be had in no other way.

We can give you the boat you want—when you want it

SEND TO-DAY FOR CATALOGUES, ETC.

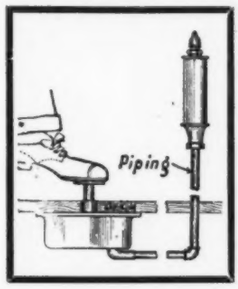
WEST MYSTIC MFG. CO.

Builders of Motor Boats, Cabin Launches and Marine Engines

WEST MYSTIC, CONNECTICUT

Let us tell you just why our foot-operated "WORDY" Whistle for Motor Boats is so superior to any exhaust or Battery Whistle

The "WORDY" Foot-Operated Whistle *for* Motor Boats



The Whistle That is Independent *of* the Engine

You've heard of the steamboat that had to stop every time she blew her whistle because it took all the steam. Nothing like this is possible with the "WORDY" Whistle. It is neither dependent on the engine nor on the uncertainties of a battery. Foot power is cheap and always at—foot:

The "WORDY" is a foot-operated, all-brass, two-toned whistle. It consists of an air dash pot with a capacity of 27 cubic inches of air. It is self-contained and requires only five square inches of space below the deck. It can be placed anywhere in the boat, wherever most convenient, and connected to the dash pot below with standard one-half inch pipe connections.

FULLY GUARANTEED—DUST PROOF—WATER PROOF—FROST PROOF

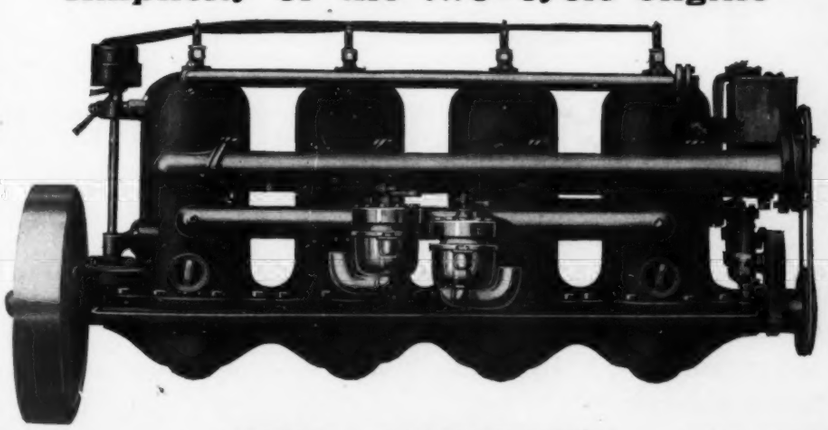
PRICE COMPLETE $9.00 Sent prepaid on receipt of price or by express C. O. D.

WORDINGHAM MFG. CO., 209 Grand Ave., Milwaukee, Wis.

Utmost power, utmost speed --- with all the repair-proof simplicity of the two-cycle engine

Four cylinder extreme high speed Vim Motor

Bore and stroke 5x5 inches.
3 cylinder—35-40 H.P.
4 cylinder—40-55 H.P.



Four cylinder extreme high speed Vim Motor

Bore and stroke 4x4 inches.
2 cylinder—12-15 H.P.
3 cylinder—19-23 H.P.
4 cylinder 26-31 H.P.

The new "Extreme High Speed" VIM MOTOR The most perfect two cycle motor made

The history of the gas engine—except the two-cycle type—has been an inevitable progress of complication.

Every (supposed) betterment meant an added part or parts liable to wear, repair and replacement.

On the other hand, there is not a single part on the new Vim Extreme High Speed Motor—which, as we have said, is the perfection of the two-cycle engine—that can get out of order through wear and friction.

There are no valves to require vigilant care and attention; there is no fussy, intricate oiling system.

Yet with this beautiful repair-proof simplicity this new Vim type is the most powerful engine, for cylinder dimensions, in the world.

It is more flexible of control than the most obedient six-cylinder, four-cycle engine.

You ought to know about the positive non-backfire feature in all Vim Motors; the new throttle and gasoline control; the wonderful new distributor that insures uniform volume of gas to each cylinder; the infallible oiling system, and the other merits peculiar to the Vim.

In selling the Vim, we guarantee satisfaction, or a price refund in 30 days.

Clip and send the coupon.

The Vim Motor Manufacturing Company
440 Market St., Sandusky, Ohio

Representatives: G. D. Thorndyke Machine Co., Portland, Me.; F. B. Burton, Baltimore, Md.; Bowler, Holmes & Hecker Co., New York; W. S. Carman, Bourse Bldg., Philadelphia; I. L. LaFleur, Limited, Montreal, Que.

The Vim Motor Mfg. Co.,
440 Market St., Sandusky, Ohio.

I should like to have all the information about Vim Motors.

Name.....

Address.....

Index to Advertisers.

Adams & Co., A. A. 66
Aluminum Foundry Co. 64
Atlantic Co. 66
Autoforce Ventilating System 66
Autogenous Welding Equipment Co. 66
Bath Marine Construction Co. 66
Blake Electrical Co. 66
Boucher Mfg. Co., H. E. 62
Bruns, Kimball & Co. 62
Bryant & Berry Co. 64
Byrne, Kingston & Co. 72
Camden Anchor-Rockland Machine Co. 66
Cape Cod Power Dory Co. 64
Cartridge Coil Co. 66
Cary Smith & Ferris 53
Cavito Underwater Exhaust Co. 64
Coates Clipper Mfg. Co. 64
Cox & Stevens 53-56
Craig, James 62
Curtiss Co., J. H. 62
Dayton Electrical Mfg. Co. 70
Desmond Co. 70
Doman Co., H. C. 66
Dow Mfg. Co. 63
Dunn, Walter E. 66
Edgar Mfg. Co. 66
Electric Launch Co., The ..... 2nd Cover
Essex Engine Co. 62
Factory Sales Corp. 69
Ferro Machine & Foundry Co. 67
Fox Reversible Engine Co. 67
Frisbie-Heft Motor Co. 66
Gas Engine and P. Co. and Chas. Seabury & Co., Cons. 69
Gielow, Henry J. 53-57
Gray Motor Co. ..... 4th cover
Gray-Hawley Mfg. Co. 64
Greenslade Oil Co. 64
Haddock, R. M. 53
Havoline Oil Co. 62
Heinze Electric Co. 68
Hill, R. S. 64
Holmes Motor Co. 66
Hopkins & Co., John C. 70
Hoyt Electrical Instrument Works 65
Huberth & Gabel 65
Ideal Switch Co. 62
Janney, Steinmetz & Co. 64
Jencick Motor Co. ..... 3rd cover
Jones, Frank Bowne 58
Lavalette & Co. 64
Mathisen Boat Co. ..... 3rd cover
McIntosh Yacht Agency 59
Mianus Motor Works 70
Milton Boat Works 66
Monitor Boat & Engine Co. 62
Montgomery, Jr., Richard M. 62
Morss Co., A. S. 66
Motor & Mfg. Works Co. 66
Mower, Chas. D. 53-60
National Motor Boat & Engine Show 67
National Steel Products Company 70
Naval Architects & Yacht Brokers ..... 53 to 62
Needham, A. C. 62
New Belle Isle Motor Co. 70
Nock, Frederic S. 53
Orswell Igniter Co. 66
Packward Electric Co. 70
Palmer Bros. 68
Roper & Co., C. F. 63
Sagamore Engine Co. 66
Samson Cordage Works 62
Scripps Motor Co. 63
Seaman, Stanley M. 61
Siegel Cooper Co. 63
Snow & Petrelli Mfg. Co. 68
Springfield Motor Co. 64
Standard Motor Cons. Co. ..... 2nd cover
Stanley Co. 64
Tams, Lemoine & Crane 54
Taunton Motor Boat Co. 64
Termaat & Monahan 64
Thomas & Co., W. E. 62
Thompson Co., J. H. 66
Thrall Motor Co. 66
Toppan Boat Mfg. Co. 66
Trebert, H. L. F. 68
Trimount Rotary Power Co. 63
Truscott Boat Mfg. Co. 62
Upson-Walton Co. 65
Vim Motor Company 71
Watres Mfg. Co. 66
Wells, Theodore D. 53
West Mystic Mfg. Co. 70
White & Co., E. M. 68
Whittaker, Morris 53
Whittelsey and Whittelsey 53-55
Wilkinson Co., Wm. H. 66
Wilmarth & Morman Co. 64
Wolverine Motor Works 68
Wordingham Mfg. Co. 71

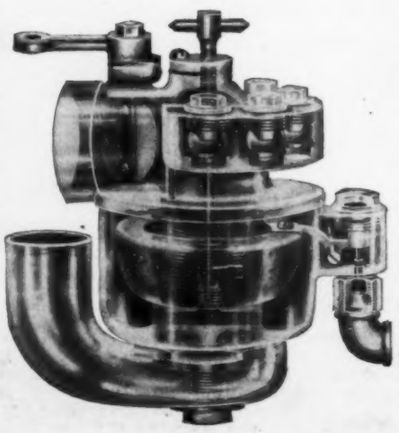
KINGSTON

FLOATING BALL CARBURETOR

Just what you want

Why tinker with that inferior make of Carburetor or mixing valve, when you can be rid of that "uncertain feeling" by equipping your motor with a

KINGSTON
FLOATING BALL
CARBURETOR



This is the Carburetor that has been acknowledged as the *best* by thousands of satisfied users.

Why not join that class and *KNOW* that your motor is doing all it is capable of doing.

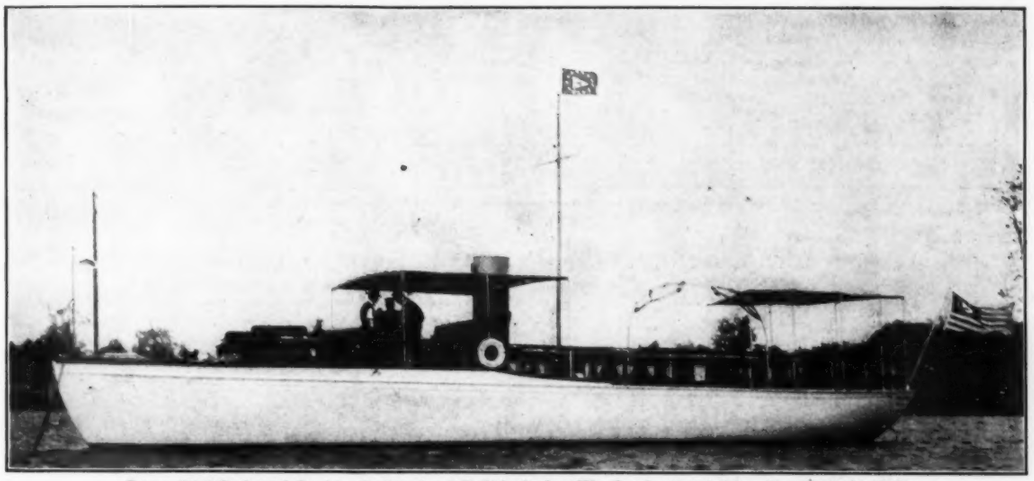
Get our Catalogue.

The Oldest Carburetor Manufacturers in the U. S.

BYRNE, KINGSTON & CO., **KOKOMO, INDIANA**
Established 1895

JENCICK stands for science in Marine Engine Construction

ASK ANY JENCICK USER



Triune, 70-H.P. Jencick Engine. Designed and Built by Luders Mfg. Co., for Houck Bros., New Rochelle, N. Y.

SOME marine engines deliver their power at full speed, but remind you of a boiler factory in operation. The Jencick, built on the most advanced scientific lines, delivers its full rated power and runs as smoothly as a dynamo. On one-half the weight of a cumbersome slow-speed engine, the Jencick delivers greater power without noise, jar or vibration. The highest grade metal obtainable is used. It costs us more to construct this way, but we believe nothing is too good for a pleasure yacht. If you love the water and cannot stand the racket of a marine engine in operation let us give you a Jencick demonstration. Many have told us their superb quiet running and constant performance on large cruising yachts has been a revelation to them.

JENCICK MOTOR MFG. CO., Port Chester, New York, U. S. A.

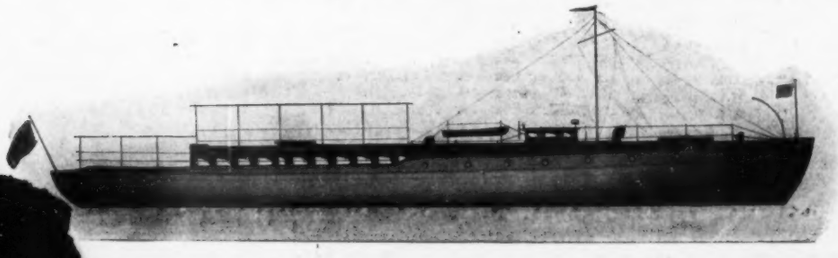
THIRTY-FIVE YEARS OF SUCCESSFUL EXPERIENCE BEHIND

MATHISEN YACHTS AND LAUNCHES

Regardless of the size or type and the requirements of whatever motor craft you want—it will pay you to let us show you that we know how—and that our prices are right. It's better to determine this before you order elsewhere than after, so

DO IT NOW

Let us figure upon your plans or may we submit plans and specifications.



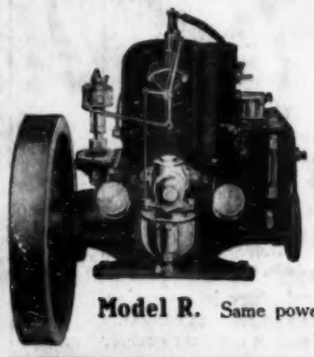
Our experience guarantees you entire satisfaction.

Write us or send for catalogue.

THISEN BOAT COMPANY, OSHKOSH, WIS.

GRAY MOTORS WIN

¶ Here are a few of the races where Gray Motors *made good* the past year. It is only a *partial* list of *Gray Winners,* but it's enough to show what Gray Motors do.

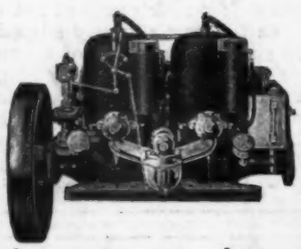


6 h.p. Complete Model "S" **$106**

"This is the Motor that made the Gray Motor Company famous."

Model R. Same power with complete outfit, **$89.50**

6 HP Gray won	1st	San Diego, Cal.	Aug. 22	"Gray Streak"	G. E. Bowles
6 HP Gray won	2nd	San Diego, Cal.	July 5	"Gray Streak"	G. E. Bowles
		1st place in this race won by a Gray.			
6 HP Gray won	2nd	San Diego, Cal.	Aug. 22	"Hummer"	F. Benham
		1st place in this race won by a Gray.			
6 HP Gray won	3rd	San Diego, Cal.	Sept. 6	"Hummer"	F. Benham
		1st place in this race won by a Gray.			
6 HP Gray won	1st	Twin Lakes, Conn.		"Grayling"	C. S. Blake
6 HP Gray won	1st	Chicago, Ill.	Sept. 6	"Blanche"	E. J. Bigelow
6 HP Gray won	1st	Vincennes, Ind.	June 10	"R. E. R."	C. Ritterskamp
6 HP Gray won	1st	Vincennes, Ind.	June 17	"R. E. R."	C. Ritterskamp
6 HP Gray won	1st	Vincennes, Ind.	June 24	"R. E. R."	C. Ritterskamp
6 HP Gray won	1st	Detour, Mich.	Aug. 12	"Friendship"	G. W. Bryant
6 HP Gray won	1st	Clear Lake, Ia.		"Ho-Bo"	Mark White
6 HP Gray won	1st	Friendship, Me.	Aug. 21	"Greyhound"	A. E. Condon
6 HP Gray won	1st	Waldoboro, Me.	Sept. 6	"Greyhound"	A. E. Condon
6 HP Gray won	1st	Waldoboro, Me.	Sept. 6	"Greyhound"	A. E. Condon
6 HP Gray won	2nd	Sabula, Ia.	June 17	"Perhaps"	Fred Goos
6 HP Gray won	1st	Savanna, Ill.	Sept. 2	"Perhaps"	Fred Goos
6 HP Gray won	2nd	Port Huron, Mich.	July 3	"Spray"	A. J. Green
6 HP Gray won	1st	Keansburg, N. J.	Sept. 6	"Lilla"	T. Teasdale
6 HP Gray won	1st	Keansburg, N. J.	Sept. 6		Ed. Gardener
6 HP Gray won	2nd	Portsmouth, O.	Oct. 4	"Alice Valor"	Wm. Journey
6 HP Gray won	1st	Alsea, Ore.	May 22	"Theodore"	O. C. Starwood
6 HP Gray won	2nd	Burlington, Vt.	July 6	"Santa Maricie"	J. S. Denning
		1st place in this race won by a Gray.			
6 HP Gray won	1st	Burlington, Vt.	Aug. 3	"Santa Maricie"	J. S. Denning
6 HP Gray won	2nd	Burlington, Vt.	Aug. 3	"Santa Maricie"	J. S. Denning
		1st place in this race won by a Gray.			
6 HP Gray won	1st	Burlington, Vt.	July 6	"Brush"	A. L. Whiting
6 HP Gray won	2nd	Burlington, Vt.	Aug. 3	"Brush"	A. L. Whiting
6 HP Gray won	1st	St. Catherines, Ont.	Aug. 25		B. W. Jones
6 HP Gray won	1st	Toronto, Ont.	Aug. 7	"Velo"	H. R. Frost
6 HP Gray won	1st	Newport Bay, S. Cal.	July 5	"Pop-Along"	J. P. Burnham
6 HP Gray won	1st	Conesus, N. Y.			L. E. Van Doren
4 HP Gray won	1st	San Diego, Cal.	July 5	"Roma"	W. Layman
4 HP Gray won	1st	Tottenville, N. Y.	Sept. 6	"Scamp"	C. W. Cole
4 HP Gray won	1st	Morristown, Pa.	Aug. 16	"U. S. A."	M. L. Ganser
4 HP Gray won	2nd	Morristown, Pa.	Aug. 16	"U. S. A."	M. L. Ganser
4 HP Gray won	2nd	Rotorua, N. Z.		"Marama"	D. Lundon
4 HP Gray won	2nd	Savanna, Ill.	Sept. 2	"Ida Grace"	A. B. Stanley
4 HP Gray won		Savanna, Ga.		"Irene"	L. O. Aveilhe
3 HP Gray won	2nd	San Diego, Cal.	July 5	"Cocko"	J. M. Panter
		1st place in this race won by a Gray.			
3 HP Gray won	1st	Woodmere, N. Y.	Aug. 21	"Radio M"	Chas. Walsh
3 HP Gray won	2nd	Woodmere, N. Y.	Sept. 4	"Radio M"	Chas. Walsh
10 HP Gray won	2nd	Stratford, Conn.	Sept. 3	"Nancy Van"	C. E. Rogers
10 HP Gray won	1st	Detour, Mich.	Aug. 12	"Wincna"	W. L. Campbell
10 HP Gray won	1st	Pt. Carling, Ont.	Aug. 14	"Kalamazoo"	C. S. Dayton
10 HP Gray won	1st	Atlantic City, N. J.	July 20	"Lady Gray"	W. Cramer
10 HP Gray won	2nd	San Diego, Cal.	July 5	"Grayling"	H. Northern
2½ HP Gray won	1st	Medford, Mass.	Aug. 25	"D. O. T."	W. R. Chandler
2½ HP Gray won	2nd	Medford, Mass.	Aug. 25	"D. O. T."	W. R. Chandler
12 HP Gray won	1st	San Diego, Cal.	July 5	"Black Cat"	T. C. Hammond
12 HP Gray won	1st	San Diego, Cal.	Sept. 6	"Black Cat"	T. C. Hammond
12 HP Gray won	1st	Davenport, Ia.	Aug. 18	"Viola"	Ed. Gerke
12 HP Gray won	1st	Fairhaven, Mass.		"Gray-Hound"	J. M. Perry
12 HP Gray won	1st	Seattle, Wash.		"Pokey"	G. J. Hildebrand
12 HP Gray won	1st	Seattle, Wash.		"Lady Jane Gray"	S. V. B. Miller
12 HP Gray won	1st	Seattle, Wash.		"Lady Jane Gray"	S. V. B. Miller
12 HP Gray won	1st	Burlington, Vt.	July 6	"Rip"	Robt. Peterson
12 HP Gray won	1st	Plattsburg, N. Y.	Sept. 6	"Rip"	Robt. Peterson
12 HP Gray won	1st	Burlington, Vt.	Aug. 8	"Rip"	Robt. Peterson
12 HP Gray won	1st	Burlington, Vt.	Aug. 8	"Rip"	Robt. Peterson
12 HP Gray won	1st	Burlington, Vt.	Aug. 8	"Rip"	Robt. Peterson
12 HP Gray won	1st	Patchogue, N. Y.	Aug. 21	"Dido"	Fred Creighton
12 HP Gray won	1st	Portland, Ore.	May 30	"Alta"	Siegfried Bros.



12 h. p.—develops 13 to 16 h. p. and *wins.* Makes good in speed, pleasure and working boats. Built as good as any motor can be built—of the best material that money can buy—moderately light weight, moderately high speed. Price complete with fresh water outfit, **$206**

12 HP Gray won	1st	Portland, Ore.	Sept. 6	"Alta"	Siegfried Bros.
12 HP Gray won	1st	Saratoga Springs, N.Y.	Sept. 6	"Greyhound"	J. C. Hodges
12 HP Gray won	1st	Ecorse, Mich.	Aug. 20	"Sylph"	Wm. Rummels & Fred Hays
12 HP Gray won	1st	Grosse Isle, Mich.	Sept. 6	"Sylph"	Wm. Rummels & Fred Hays
12 HP Gray won	1st	Lowell, Mass.	Sept. 3	"Frolic"	John W. Laing
16 HP Gray won	1st	Sabula, Ia.	June 17	"Mosquito"	E. W. Granger & C. V. Myers
16 HP Gray won	2nd	Sabula, Ia.	June 17	"Mosquito"	Granger & Myers
16 HP Gray won	1st	Rock Island	July 3	"Mosquito"	Granger & Myers
16 HP Gray won	1st	Burlington, Ia.	July 6	"Mosquito"	Granger & Myers
16 HP Gray won	1st	Clinton, Ia.	Aug. 30	"Mosquito"	Granger & Myers
16 HP Gray won	1st	Savanna, Ill.	Sept. 2	"Mosquito"	Granger & Myers
16 HP Gray won	2nd	Savanna, Ill.	Sept. 2	"Mosquito"	Granger & Myers
16 HP Gray won	2nd	Savanna, Ill.	Sept. 2	"Mosquito"	Granger & Myers
18 HP Gray won	1st	Guernsey, C. I.	Aug. 12	"Mermaid"	G. F. Haynes
18 HP Gray won	1st	Guernsey, C. I.	Aug. 12	"Mermaid"	G. F. Haynes
18 HP Gray won	2nd	Guernsey, C. I.	Aug. 12	"Mermaid"	G. F. Haynes
		1st place in this race won by a Gray.			
18 HP Gray won	2nd	Guernsey, C. I.	Aug. 12	"Mermaid"	G. F. Haynes
		1st place in this race won by a Gray.			
18 HP Gray won	2nd	Guernsey, C. I.	Aug. 12	"Sirius"	G. F. Peck
		1st place in this race won by a Gray.			
18 HP Gray won	1st	Guernsey, C. I.	Aug. 12	"Sirius"	G. F. Peck
18 HP Gray won	1st	Guernsey, C. I.	Aug. 12	"Sirius"	G. F. Peck
24 HP Gray won	1st	Savannah, Ga.	May 29	"Carria"	E. W. Carson
24 HP Gray won	1st	Savannah, Ga.	July 31	"Carria"	E. W. Carson
24 HP Gray won	1st	Savannah, Ga.	Aug. 14	"Carria"	E. W. Carson
24 HP Gray won	2nd	S. Atlantic, Champ.	Oct. 10	"Carria"	E. W. Carson
20 HP Gray won	1st	Portsmouth, O.	Oct. 4	"Turk"	T. M. Burt
20 HP Gray won	1st	Clinton, Ia.	May 31	"Outing 2"	H. A. Kelley
20 HP Gray won	1st	Clinton, Ia.	May 31	"Outing 2"	H. A. Kelley
		CHAMPIONSHIP I. L. Y. A.			
40 HP Gray won	1st	Toledo	Aug. 27	"Grayling"	O. J. Mulford
		Powered with three 40 HP Grays—120 HP.			

1, 2 and 3 Cylinders, 3 to 30 h. p. $60 and upwards

Write for Catalog and Complete Information

GRAY MOTOR CO. 933 LARNED STREET Detroit, Mic

CAREY PRESS, N. Y.